



Again the young man's fancy lightly turns to thoughts of fitting out

Contents, April, 1917

Fitting Out Number

	PAGE		PAGE
Uncle Sam to Build Patrol Boats.....	7	American Marine Motors:	
Taste in Furnishing and Decoration.....	8-10	Sterling 17-25 H.P. Shows Improvements.....	30
Brightening Up the Brightwork.....	11-12	The Scripps Greyhound a Valve-in-Head Motor....	30
The Lighter-Than-Air Auxiliaries.....	13-15	The Gray-Prior 4-Cycle Model D-4.....	31
Is Your Motor in Shape?.....	16-17	Lacy V-Eight Made in 100 and 200 H.P. Sizes...	31
Next Summer's Cruise Down East—Part III.....	18-19	Swinging the Boat for Deviation.....	32
Miami Sets New Records.....	20	All the Kinks of Grinding a Motor's Valves.....	33
Prize Contest in Questions and Answers:		New Things for Motor Boatmen.....	34
Overhauling a Marine Motor.....	21-22	Yard and Shop.....	35-38
Types of Bows and Sterns.....	22-23	Plans of the Anti-Submarine 110-Footers.....	39
Timing the Ignition System.....	24-25	Specifications for the Naval Patrol Scouts.....	40-41
My Ideal Cruiser—No. 3, White Cap.....	26-29	Among the Clubs.....	60

April, 1917

**MOTOR
BOATING**

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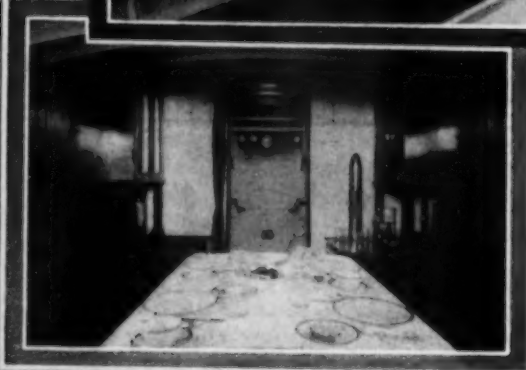
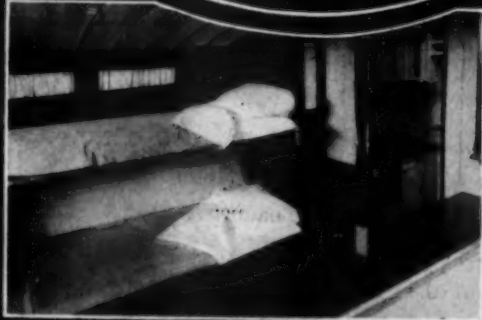
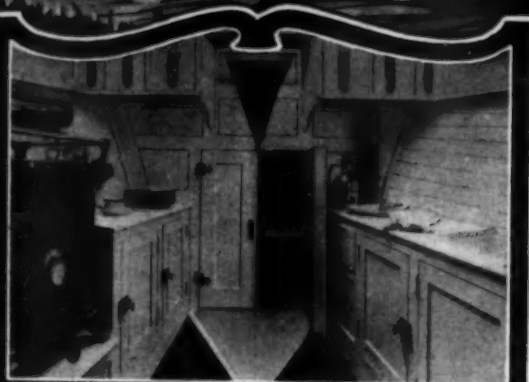
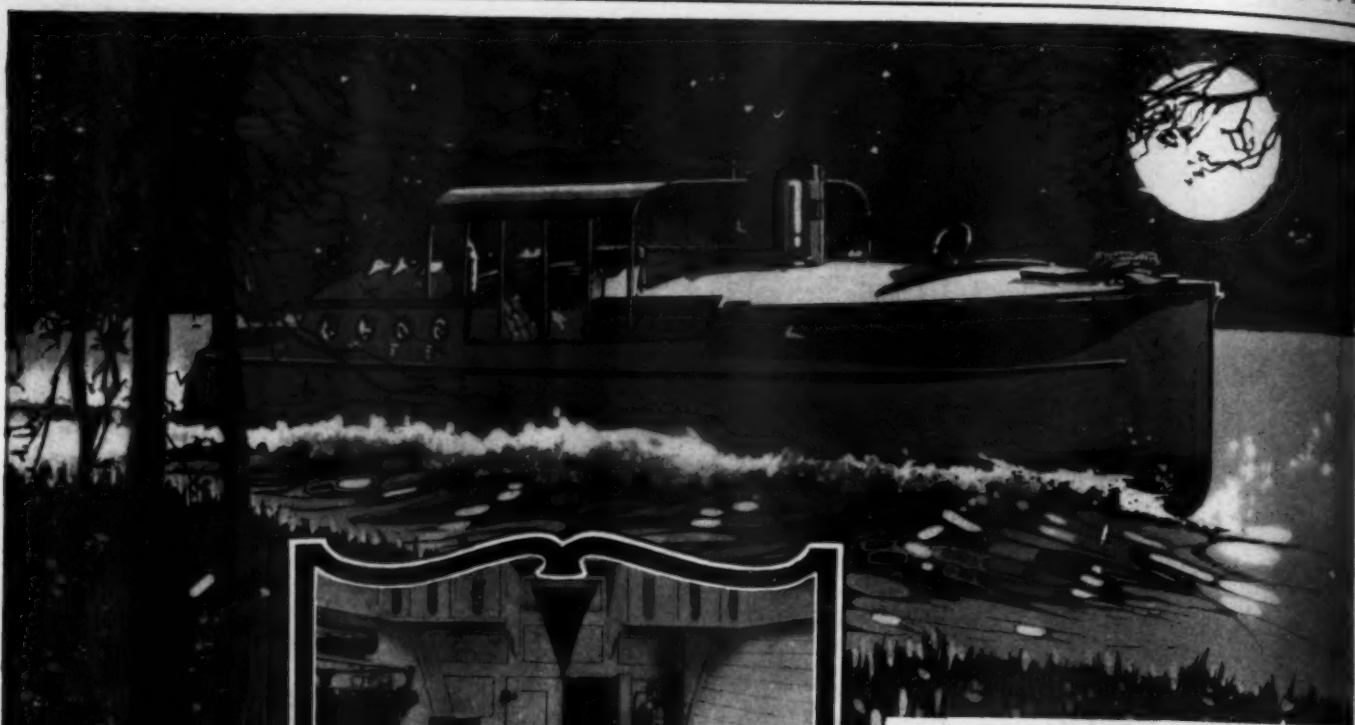
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If our prices are sometimes slightly higher than those of other boat builders it is simply because we intend to build into a boat a quality superior to what most boat builders would consider necessary. An inspection of a Great Lakes Craft would explain to you exactly what we mean.

Two very interesting booklets have been prepared, one describing this Fifty Foot Military Type Express Cruiser—ask for Bulletin No. 555-A, the other describes the Forty Foot Military Type Express Cruiser that has splendid accommodations for a party of six—ask for Bulletin No. 222-A. Write today for either or both.

Four more of these highly successful boats, two Forty Foot and two Fifty Footers, will be ready for delivery May 1st. Orders will naturally be filled strictly on priority of receipt. Our capacity for building these boats is large, but the demand is taxing this capacity to the limit.

40-foot Cruiser completely equipt, \$ 8,500

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Advertising Index will be found on page 42.

MoToR BoatInG



Lynx, owned by Nathaniel Ayer, of Boston, enrolled in the Coast Defense Reserve and taken over by the Government for patrol and scout duty

Uncle Sam to Build Patrol Boats

A Husky, Serviceable Design for 110-Footers with a Speed of $17\frac{1}{2}$ Knots Decided Upon—To Be Built by American Motor Boat Builders and Powered with Gasoline Motors

By Charles F. Chapman

THE problem of producing a fleet of armed motor boats of sufficient size and strength to protect our shores from an enemy submarine invasion is a much huger task than the average man realizes. It may be perfectly proper to talk about mobilizing the 300,000-odd motor boats we have in this country, and also patriotic of the half million men accustomed to sail on these boats to offer their services to the Government in time of war, yet if it were practical to carry such a plan into effect, which of course it is not, the net result would be chaos to the nth power. Besides having an immense number of boats, of which fully 99 per cent. would be totally unsuited for the requirements, there would be a personnel unfitted to even a greater degree. Furthermore, there would be no organization, as there is no branch of the Navy Department at the present moment which is trained or capable of handling problems of this kind.

Up to the present time the Navy Department, under whose jurisdiction this form of protection comes, has been severely criticised for doing nothing about this enormous problem of providing machinery to carry the various plans which have been suggested into effect. The various yachting organizations who have offered their membership and facilities to the

During all this period of several years' discussion as to the feasibility of the modern motor boat as a submarine defensive weapon—up to within the last few days it has been merely a discussion—MoToR BoatInG, standing almost alone, has claimed and stated over and over again that the Government should finance the building of motor boats for defensive purposes, that the boats should have a length of not less than 100 feet, and that the motor boat designers and builders of the country, as well as the motor boatmen themselves, should be given a chance to give the Government officials their ideas on the subject of the proper type of craft for this work. Up to now our pleas have fallen upon deaf ears, but at the eleventh hour we are informed that all of MoToR BoatInG's suggestions will be followed—that the boats will be 110-footers, designed by a foremost motor boat designer and built by American motor boat builders.

Plans of these interesting boats will be found on page 39.

Government have met with only a lukewarm reception.

But the fault is not altogether due to the Navy Department. The power and scope of this Department is absolutely limited by law, and if the law does not provide for motor boat submarine chasers, then the Navy Department is powerless to act, or take the first step towards safeguarding the interests of the country along these lines. Just such a condition did exist up to the closing days of the last session of Congress, but, fortunately, in the money

appropriated for the Navy at the last moment, some of it becomes available for building a number of motor boats for submarine defensive purposes.

Up to now, the Navy Department's powers being limited by law, they were obliged to depend upon the patriotism and generosity of individual yachtsmen and yachting organizations, for any progress along lines of providing motor boats of a suitable type, as well as providing the proper personnel. Many yachtsmen signified their desire to build boats along lines which would meet with the approval of the Navy Department, so that their boats could be converted into craft serviceable to the Government in time of trouble. The Department approved many plans submitted by yachtsmen, and even

(Continued on page 39)

Taste in Furnishing and Decoration

The Interior Treatment of the Motor Yacht a Matter of the Utmost Importance—Simplicity and the Effect of Spaciousness Should Be the Key-Notes in Furniture, Hangings, and Color Schemes

By Gardner Teall



otherwise one might as well build a cottage on a raft or revert to the Ark.

On the other hand what a motor boat ought to be is not, unfortunately, what every motor boat is. Individual owners are not always in agreement as to what should, and what should not, conform to the canons of good taste in furnishing and decorating a boat; in consequence of which many owners persist in float-

neither be made to look like a dairy nor like the interior of a cloister. The use of dark woods requires a perfect understanding of design in the paneling and moldings, while heaviness is to be avoided unless one enjoys the atmosphere of an old-fashioned man-of-war. How many a saloon and cabin presents the aspect of a mahogany bureau, a black walnut commode, a cherry chest of drawers or an oak

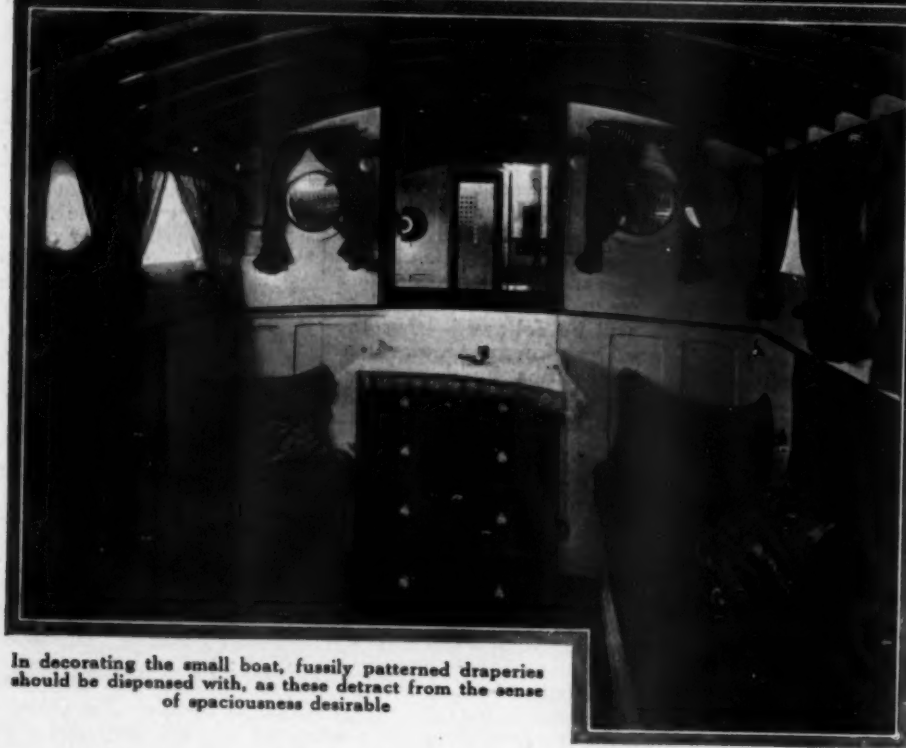
refrigerator dedicated to the Mission cult. Pause before consenting to any of these atrocities, just as you are implored to hesitate before committing the sacrilege of the shellac-sideboard-style of boat finish—it does finish the boat, artistically at least.

Now mahogany, rosewood, walnut, cherry—I refrain from birds'-eye maple—and every other seaworthy wood has its place when





Wicker furniture is admirable for deck and cockpit



In decorating the small boat, fussily patterned draperies should be dispensed with, as these detract from the sense of spaciousness desirable

ALTHOUGH its problems are not the same, the decoration and furnishing of a motor boat deserves as careful consideration as does that of a house. Furnishing and decorating a boat is only less simple in its extent; in its application it is more complex by reason of necessary eliminations and also because of rigidly imposed limitations in some directions.

There is always a right and a wrong way of doing things; at the same time let it be borne in mind that there are many ways of doing a thing rightly, when it comes to the choice of furnishings, and that there are many ways of doing things wrongly—again in the matter of choice. Although seldom necessary in a well-planned house where there need be no stint of purse, a compromise frequently is required in the matter of decorating and furnishing a motor boat.

However, things simplify themselves with the initial understanding that the motor boat is not a house but a boat, and an appreciation that on the craft's retention of the personality inherited from its traditions is based the delight which the owner and his friends find in a boat. Its comforts and luxuries—its furnishings and its decoration—must not conceal its own delectable intent; since

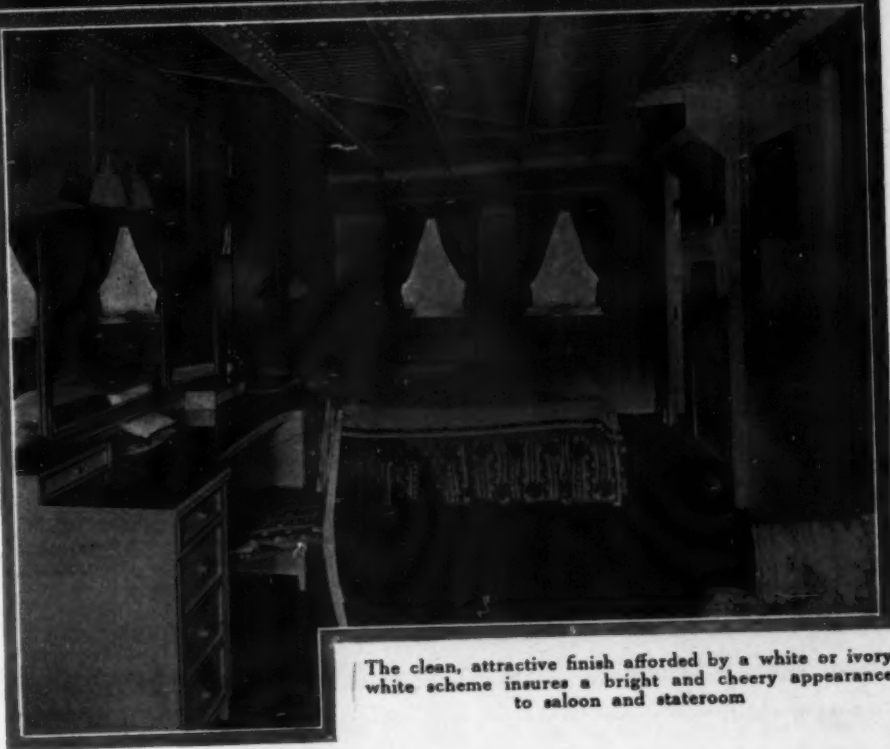
The effect of spaciousness is always
to be striven for

ing craft that are reminiscent either of a ferry boat of the early '60s, or of a steam yacht of the Hohenzollern dynasty. A lack of taste more than perversity is the cause of such instances and there is hope for the best, especially as each season witnesses fewer unattractive boats in commission and finds owners and builders alike interesting themselves keenly in boat furnishing and decoration.

Every true boat lover wants to see things about his craft shipshape. This cannot be accomplished with a preponderance of the superfluous, and yet the owner of a boat does not wish it to appear bare and uninviting. The ideal motor yacht will be the one in which thought of decoration and furnishing has been taken in conjunction with her building. Nevertheless the boat already built can be made interesting and attractive in its decoration and furnishings, for the markets of today offer endless resources where good taste is in command.

WALLS AND DECKS

The first decorating problem to take into consideration is that of painting, varnishing, staining, and covering the walls and decks. In treatment one should strive for the effect of spaciousness. Whether light or dark in finish, the boat should



The clean, attractive finish afforded by a white or ivory white scheme insures a bright and cheery appearance to saloon and stateroom

properly in that place; the point is, that the motor yacht owner should take the trouble in good season to project an idea of the completed appearance of any sort of finish, and if his own taste and judgment are not sufficiently extensive to make him sure he is doing the right thing in the right way, let him confer with some authority in such matters. The expense of expert advice—one need not

tain any desired tint—ivory, cream, pale green, buff, tawny, pale yellow, azure, etc., as occasion requires and the final decorative scheme dictates. Of course, these are matters for the experienced boat painter to attend to, although the owner will do well to acquaint himself with them, for by so doing he may be the more sure of getting what he wants.

Only recently yacht decorators have come to

water, followed, as they invariably are in all boat baths, by intrushes of cool air from the port-holes.

The treatment of the saloon floor and the decks of the motor boat comes within the builder's province, except where painted surfaces are requisite. More attention is also being paid to color and decorative devices in painted decks, such as defining small quarry-

Strikingly patterned upholstery and draperies sometimes add greatly to the attractiveness of a stateroom, provided the color scheme is not bizarre or too insistent



always take it if it is not convincing, though in nine cases out of ten it is reasonably sure to be—is not great and is more than offset by the advantages derived from such a course and the disappointments averted. Several prominent architects and a number of important decorators in this country specialize in the matter of motor boat decoration, furniture, and interior design accessory to the builder's construction work.

The preference for white walls and woodwork for the motor yacht has much to substantiate it. The clean, attractive finish afforded by a white or ivory white scheme insures a bright and cheery appearance to saloon and stateroom. As with the same sort of a finish in the rooms of a Colonial house, a white trim furnishes surroundings that admit of many sorts of decoration with complete harmony and consistency. The refinement of white enamel paint commends itself for use in the decoration of the motor yacht.

On walls, ceilings, woodwork, metal, moldings, etc., enamel gives the most permanent paint finish to be desired. If a lustrous white surface is not wanted, one may obtain an extremely attractive dull egg-shell finish by rubbing with powdered pumice and water. With certain enamels, too, the painter can at-



Generally speaking, simplicity should be the key-note in furnishing and decorating any compartment of a motor boat

appreciate the value of definite color in cabin decoration. Heretofore, decorators have depended almost entirely on the color notes supplied by upholsteries, hangings, and cushions, and very often these, when properly planned, are sufficient. On the other hand, a restrained use of color in paint often adds distinction to the scheme, although it must be remembered that in decoration of any sort, whatever is introduced must be of a character that wears well, that does not tire eye or nerve.

When it comes to the matter of the color scheme for the bathroom of the motor yacht I think there can be no question about its being finished in white. It must be remembered that this compartment will require an enamel paint of durable character to withstand the splashings of hot water and of cold

like squares by means of black division lines across the body color surface. One of the neatest and most shipshape painted surfaces of this sort which I have seen was painted in dull orange and lined to 4 x 4-inch squares by black lines, in this instance $\frac{3}{8}$ inches wide.

FLOOR COVERINGS

The "Don'ts" in the matter of floor coverings for motor yachts are, happily, nearly all confined to warnings against a display of bad or of negative taste. Above all, consider the character of

the boat. Why yacht owners will continue to carpet cabins with the standard garnet-colored or the equally standard bottle green-colored carpets that seem, by tradition, to be dedicated to service in church aisles, is difficult to understand when so many floor coverings of suitable nature—and these others most certainly are not—are to be had. The invention of the vacuum cleaner (and a motor yacht lacking one lacks completeness) has made carpeting more general than rugs in cabin and saloon furnishings. Beautiful, harmonious, monochromatic Wilton, Axminster, and English velvet carpetings are attractive and agreeable for stateroom and saloon. The two-toned carpets likewise commend themselves, but violent or over-bright colors or

(Continued on page 58)

Brightening Up the Brightwork

The Application of Varnish to the Boat When Fitting Out One of Utmost Importance—Upon What the Success or Failure of the Job Depends

IN the spring the young man's fancy lightly turns to thoughts of painting his motor boat. With most of us motor boat enthusiasts, this springtime fever for making our boats handsome is very much akin to the feeling we have for our best girl.

The editor of MoToR Boating has asked me to give some advice to the owner who wants to paint his own boat. Like Mr. Punch to the young man about to be married, I am tempted to say "Don't" to the motor boat owner. I shall not do so for the good reason that there are two aspects to every job of motor boat painting—the result on the boat and the result on the painter.

It is fairly certain that, doing the work himself, the boat owner will not get as good a job of painting as he would if he turned it over to a professional boat painter. I do not when I paint my boat, although I am in the paint and varnish business, but I keep on painting my boat each year just the same, and I am sure I can figure out a profit on the transaction, in enjoyment of my own handiwork, in the additional time I spend out of doors instead of in my office, and, perhaps least important of all, in the pecuniary saving I make on the job. If you are willing to accept what I have to say on this basis, with the distinct understanding that I doubt your ability to do as good work as a professional painter, read on. Otherwise stop here and go your own way.

The functions of the paint and varnish on your boat are two-fold; first and most important, the coatings prevent decay and deterioration of the wood or metal which would otherwise take place. Second, and quite important enough, they give the last touches of beauty to the graceful form of that interesting and imposing craft—"my boat."

The first



Giving the stern deck a thorough job of scraping

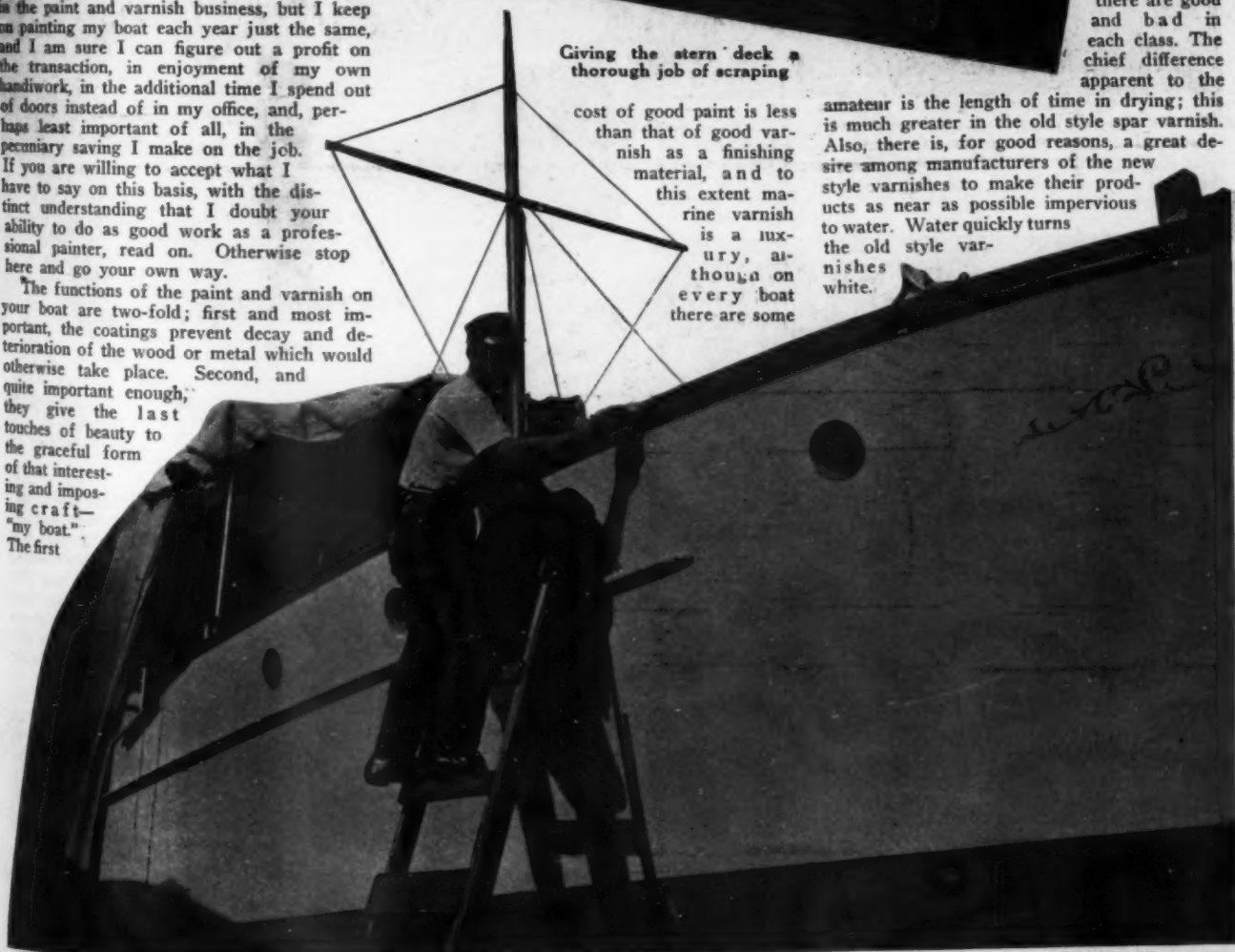
cost of good paint is less than that of good varnish as a finishing material, and to this extent marine varnish is a luxury, although on every boat there are some

places where paint won't do the work as well and where varnish is a necessity. Furthermore, if a boat is made of fine wood, most of us prefer to use varnish rather than obscure the beauty of the wood.

It should be noted also that paint alone cannot be used to advantage on the hulls of speed boats, because it makes for too much friction. Some speed boat owners follow a very elaborate method of finishing, using paint and other materials as undercoatings, and finishing up the work with varnish rubbed smooth and polished. More owners, however, are content with varnish alone, although polishing the last coat is a general practice with all who want a "slick bottom" and the maximum speed per horsepower unit.

There are a great many spar varnishes on the market to-day, and these may be broadly divided into two classes—the old and the new style. It is taken for granted, of course, that there are good and bad in each class. The chief difference apparent to the

amateur is the length of time in drying; this is much greater in the old style spar varnish. Also, there is, for good reasons, a great desire among manufacturers of the new style varnishes to make their products as near as possible impervious to water. Water quickly turns the old style varnishes white.



"The functions of the paint and varnish on your boat are two-fold; first and most important, the coatings prevent decay and deterioration of the wood or metal which would otherwise take place. Second, and quite important enough, they give the last touches of beauty to the graceful form of that interesting and imposing craft—"my boat."

The writer knows that one spar varnish now on the market is absolutely and permanently water-proof. This, of course, is an advantage from the owner's standpoint, but it must be borne in mind that no varnish, nor any other material, can permanently withstand

when the early spring winds are heavy with dust. The quicker your varnish sets, the cleaner the job will be under these conditions. A little while ago quick-drying varnishes were always poor varnishes with nothing except their quickness to recommend them. It is still true of

many quick varnishes that they are not durable, but there are now made very quick-drying varnishes which are thoroughly reliable. A quick-drying material may outlast one that takes two or three times as long to dry—or it may not. It depends, not on the drying time,



the elements—the combination of sun, water, wind, and temperature changes. So, don't expect the impossible of your varnish. Remember it is only gum and oil, and that a coat is very, very thin.

Take pains that all dirt and grease are wiped away before starting to varnish



Remove the old coatings by burning, or with a good varnish remover



That the new varnishes dry quickly is a tremendous advantage to the enthusiast who must have the work in a jiffy and to the man who does his own work—perhaps out of doors,

tied. Paint was never meant to cover up defects

After scraping off the old paint, first make sure that all the seams are well put-

but on the material itself, and how and of what it is made.

The ideal varnish for boat work may be characterized as one which dries in the least possible time, is pale in color and is at the same time as durable as possible, with no tendency whatever to be affected by either salt or fresh water.

It is not difficult to try out the varnish you are going to use on your boat to make sure that it has these qualities, and every boat owner who has any doubt about the matter may solve the problem for himself by making such a trial. Take any two var-

nishes which are recommended to you by your friends or which you have seen advertised in reputable publications by reputable manufacturers and apply them side by side on a black or dark-colored panel. Use the same number of coats of each and of the same thickness, being sure to leave the varnish on the panel

(Continued on page 64)

The Lighter-Than-Air Auxiliaries

Dirigible and Observation Balloons Necessary for the Country's Defense by Navy and Coast Artillery—Steps Being Taken to Remedy the Deficiencies in This Branch of Our Service

By Henry Woodhouse

EVERYBODY knows that a well-appointed navy must have seaplanes—hundreds of them, some capable of speeds of close to 100 miles an hour, and armed with machine guns for air fighting; larger, but not so fast seaplanes, carrying hundreds of pounds of bombs for bombing; and slower seaplanes for spotting the fall of shots, and other purposes. Most people also know that in a general way the large Zeppelins, which are capable of staying in the air for fifty hours, and go at a speed of close to 60 miles an hour, acting as the eyes of the navy, have given Germany a certain advantage.

But few know of the other two valuable lighter-than-air craft, the "Blimp," or coast patrol dirigible, and the observation balloon.

We are now, however, to know more about these, for the United States Navy has just asked for bids for sixteen coast patrol dirigi-

bles, and plans are under way for giving the Navy a number of observation balloons.

The Navy specifications, which are based on the specifications of the Blimps, hundreds of which are being used by the Allies in the present war, are as follows:

"This specification contemplates a non-rigid self-propelled dirigible or airship designed for use in connection with coast or harbor patrol. It is intended that the dirigible shall be operated from a base on shore, but that it shall be possible for it to rest upon the surface of the water in good weather.

"The airship shall consist of a non-rigid envelope made of rubberized fabric and containing hydrogen under sufficient pressure to maintain the rigidity of the envelope. There shall be attached to the envelope vertical or horizontal fins and vertical and horizontal rudders, mooring line, rip panels, maneuvering and safety valves, ballonets or internal air sacks with means for their inflation.

"Beneath the envelope and supported thereby is carried upon a suspension a car or body containing the power plant, fuel, ballast, personnel, radio, etc.

"The envelope fully inflated has a displacement of about 77,000 cubic feet, corresponding to a gross buoyancy of 5,275 pounds when inflated with hydrogen.

"The length of the envelope is 160 feet and the maximum diameter 31.5 feet; maximum width over tail fins, 36.2 feet; the center of buoyancy is 69.2 feet from the nose; the height over all is 50 feet; horsepower of motor, 100; horsepower of blower engine, 2; maximum safe altitude, 7,500 feet.

"Designed maximum speed at an altitude of 600 feet, 45 miles per hour; endurance at full power, 10 hours; cruising speed, 35 miles per hour; endurance at cruising speed, 16 hours.

"Capacity of tanks, 100 gallons, 600 pounds.

"Total volume of both ballonets, 19,250 cubic feet.

"Reserve ballast tank in car, 300 pounds of water.

"Trimming tanks attached to envelope: Forward, 40 pounds of water; after, 50 pounds of water.

"Useful load in pounds:

Pilot and observer.....	320
Instruments	100
Radio	250
Fuel and oil.....	670
Water ballast (including 90 pounds for trimming).....	390
Sandbag ballast	211

1,941"

Hundreds of these small coast patrol dirigibles are

used by the Allies on every front. It is not unusual to see a fleet of half a dozen Blimps going out to or returning from duty along the seacoasts. Their duties are many and include spotting submarines, convoying ships, stopping vessels engaged in coast-wise commerce, examining their papers, inquiring into their business and con-

voying them to naval stations for examination if there is the least question about it.

The Blimps carry a good-sized bomb and a wireless apparatus, and if the vessel which is being overhauled by the Blimp tries to get away, it finds itself in real trouble, as the dirigible is capable of a speed of 35 miles an hour. If an attempt is made to fire upon it, down goes the bomb, while the wireless summons cruisers to deal with the recalcitrant ship.

The United States Army is also planning to order dirigibles of this Blimp type. Although we in this country have been quite backward in developing dirigibles, the Army was one of the first to order one. It acquired the scouting type dirigible built by Thomas S. Baldwin in 1908, but when the balloon deteriorated, it was not replaced. Therefore, the Army has not a single dirigible to-day.

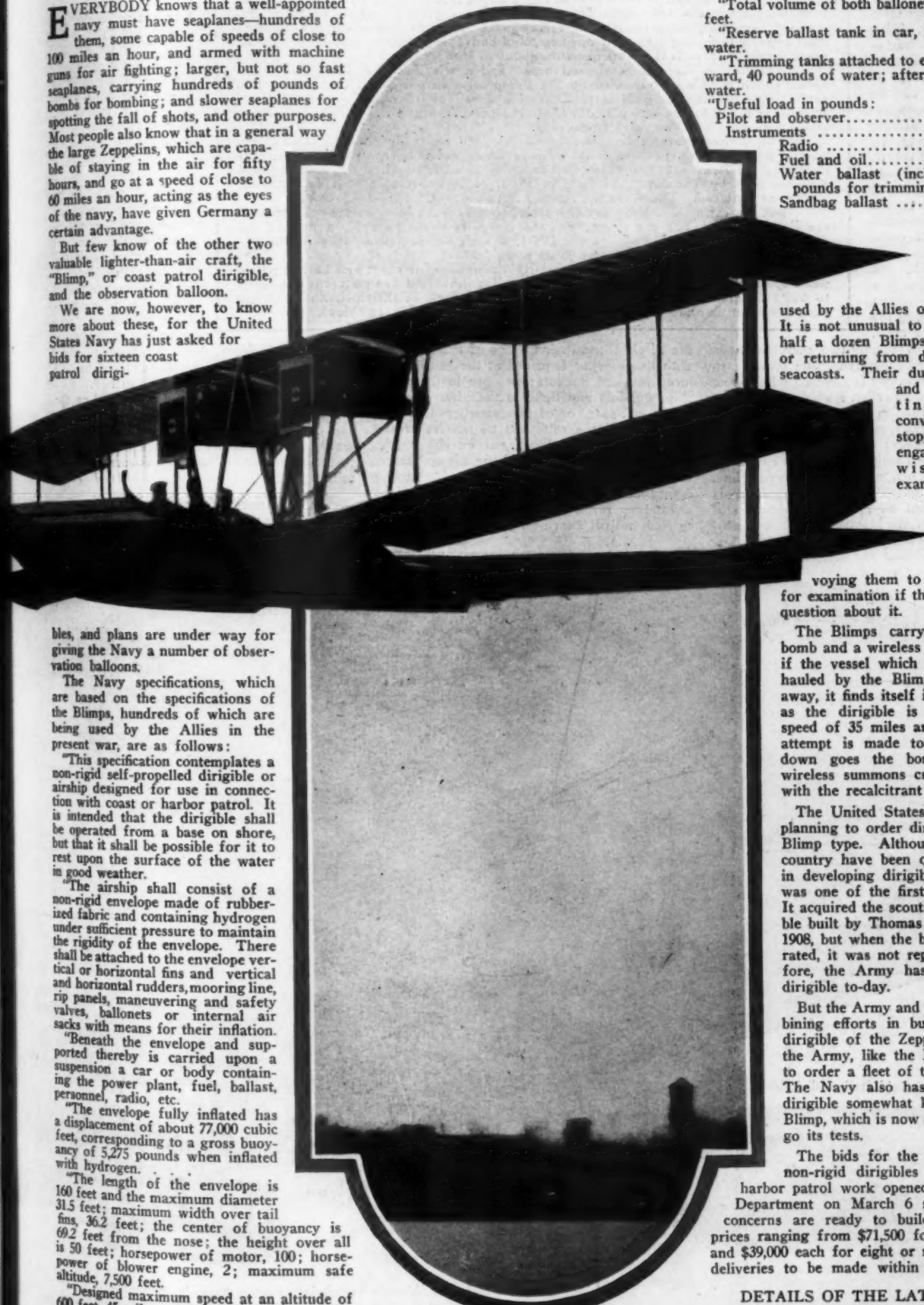
But the Army and Navy are combining efforts in building a large dirigible of the Zeppelin type, and the Army, like the Navy, is about to order a fleet of the Blimp type. The Navy also has the DN-1, a dirigible somewhat larger than the Blimp, which is now about to undergo its tests.

The bids for the eight or more non-rigid dirigibles for coast and harbor patrol work opened by the Navy Department on March 6 show that five concerns are ready to build dirigibles at prices ranging from \$71,500 for one dirigible and \$39,000 each for eight or more dirigibles, deliveries to be made within 120 days.

DETAILS OF THE LATEST ZEP

The latest Zeppelin captured by the Allies is 680 feet in length and measures 72 feet across its largest diameter. The framework

A Benoist seaplane. Flying boats and dirigibles are sadly needed for coast defense



is made up of a series of longitudinal lattice-work girders, connected together at intervals by circumferential lattice-work ties, all made of an aluminum alloy resembling duralumin.

The whole is braced together and stiffened by a system of wires, arrangements being provided by which they could be tightened up when required. The weight of the framework is reckoned to be about nine tons, or barely a fifth of the total of fifty tons attributed to the airship complete with engines, fuel, guns and crew. There are twenty-four ballonets arranged within the framework, and the hydrogen capacity is 2,000,000 cubic feet.

A cat-walk, an arched passage with a footway nine inches wide, running along the keel, enables the crew, which consists of twenty-two men, to move about the ship and get from one gondola to another. This footway is covered with wood, a material which, however, is evidently avoided as much as possible in the construction of the ship. The gondolas, made of aluminum alloy, are four in number; one placed forward on the centerline, two amidships, one on each side, and the fourth aft, again on the centerline. The vessel is propelled—at a speed, it is thought, of about 60 miles an hour in still air—by means of six Maybach Mercedes gasoline engines of 240 h.p. each, or 1,440 h.p. in all. Each has six vertical cylinders with overhead valves and water cooling and weighs

about 1,000 pounds. They are connected each to a propeller shaft through a clutch and change-speed gear, and also to a dynamo used either for lighting or for furnishing power to

has a capacity of 2,000 gallons. The date, July 14, 1916, marked on the ship is thought to indicate the date of the launching or commissioning of the vessel.

Forward of the engine-room of the forward gondola, but separated from it by a small air space, is the wireless operator's cabin and then the commander's room. The latter is the navigating platform, and in it are concentrated the controls of the elevators and rudder at the stern, the arrangements for equalizing the levels in the gasoline and water tanks, the engine-room telegraphs, and the switchboard of the electrical gear for releasing the bombs. Provision is made for carrying sixty bombs in a compartment amidships, and there is a sliding shutter, worked from the commander's cabin, which is withdrawn to allow them to fall freely. Nine machine guns are carried. Two of these, of 0.5 inch bore, are mounted on the top of the vessel, and six, of smaller caliber, are placed in the gondolas—two in the forward, one each in the amidships ones, and two in the after one. The ninth is carried in the tail.

OBSERVATION BALLOONS

When a ship nears a port or a naval base

What the "Blimp" Is and Does

"Hundreds of these small coast patrol dirigibles are used by the Allies on every front. It is not unusual to see a fleet of half a dozen Blimps going out to or returning from duty along the seacoast. Their duties are many, and include spotting submarines, convoying ships, stopping vessels engaged in coastwise commerce, examining their papers, inquiring into their business, and conveying them to naval stations for examination if there is the least question about it.

"The Blimps carry a good-sized bomb and a wireless apparatus, and if the vessel which is being overhauled by the Blimp tries to get away, it finds itself in real trouble, as the dirigible is capable of a speed of 35 miles an hour. If an attempt is made to fire upon it, down goes the bomb, while the wireless summons cruisers to deal with the recalcitrant ship.

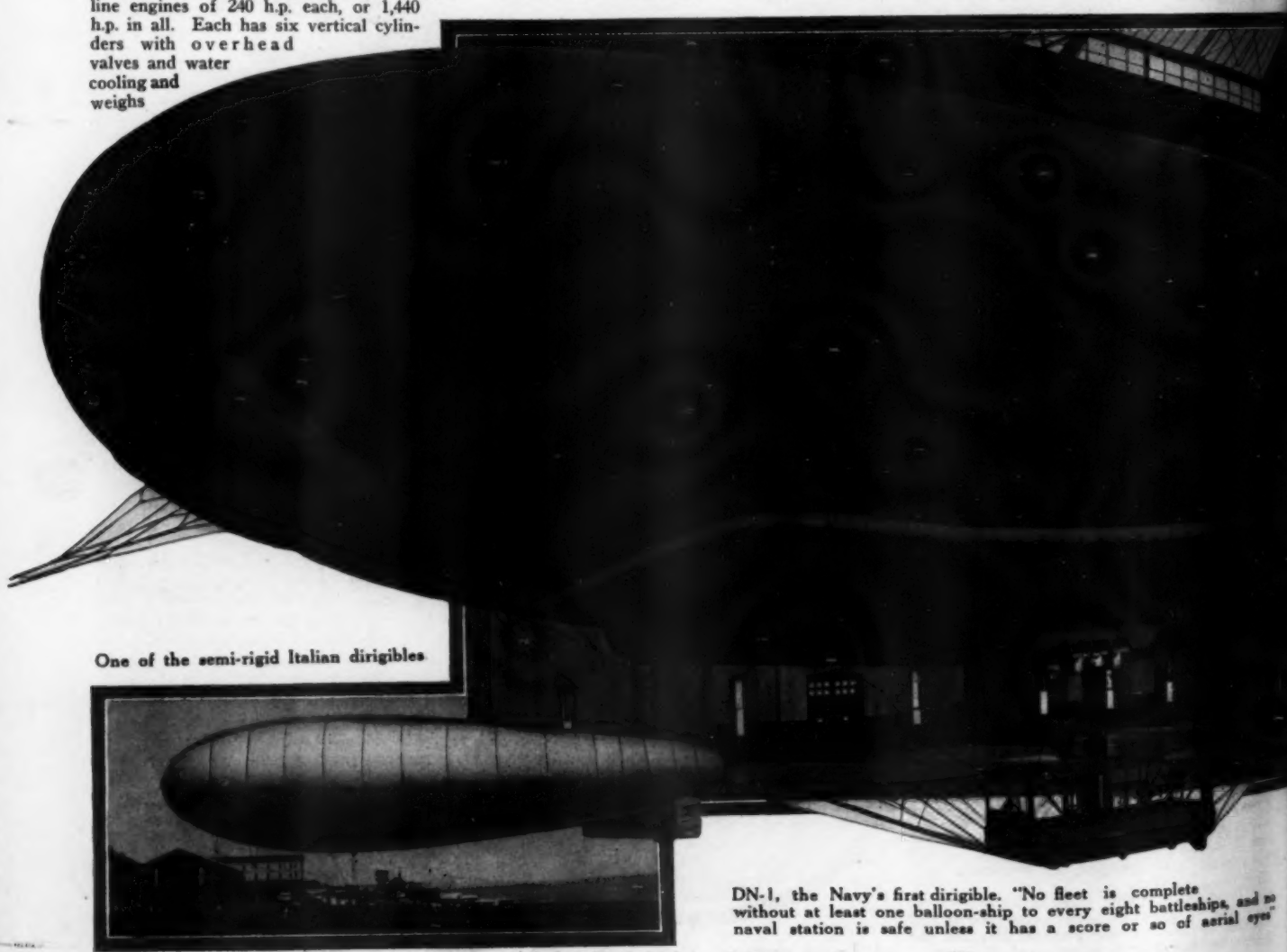
"The United States Army is also planning to order dirigibles of this Blimp type. Although we in this country have been quite backward in developing dirigibles, the Army was one of the first to order one. It acquired the scouting type dirigible built by Thomas S. Baldwin in 1908, but when the balloon deteriorated, it was not replaced. Therefore the Army has not a single dirigible to-day.

"But the Army and Navy are combining efforts in building a large dirigible of the Zeppelin type, and the Army, like the Navy, is about to order a fleet of the Blimp type. The Navy also has the DN-1, a dirigible somewhat larger than the Blimp, which is now about to undergo its tests.

"The bids for the eight or more non-rigid dirigibles for coast and harbor patrol work opened by the Navy Department on March 6 show that five concerns are ready to build dirigibles at prices ranging from \$71,500 for one dirigible, and \$39,000 each for eight or more dirigibles, deliveries to be made within 120 days."

the wireless installation. One of these engines with its propeller is placed at the back of the large forward gondola; two are in the amidships gondola and three in the after gondola. In the last case one of the propellers is on the centerline of the ship, and the shafts of the other two are stayed out, one on either side. With the object of minimizing air-resistance, the stays are provided with a light but strong casing of two- or three-ply wood, shaped to streamline form. The propeller shafts are carried in ball bearings. The gasoline tank

ter, worked from the commander's cabin, which is withdrawn to allow them to fall freely. Nine machine guns are carried. Two of these, of 0.5 inch bore, are mounted on the top of the vessel, and six, of smaller caliber, are placed in the gondolas—two in the forward, one each in the amidships ones, and two in the after one. The ninth is carried in the tail.



One of the semi-rigid Italian dirigibles

DN-1, the Navy's first dirigible. "No fleet is complete without at least one balloon-ship to every eight battleships, and no naval station is safe unless it has a score or so of aerial eyes"

in the war zone, the first thing one sees is strings

balloon ship to every eight battleships, and no naval base or station is safe unless it has a score or so of aerial eyes, some 2,000 feet up, watching for anything unusual.

We make some excellent kite balloons in the United States. The Army and Navy have been able to get some good balloons which are about 80 feet long and have a gas capacity of 25,000 cubic feet. Unfortunately, we have very few kite balloon operators, but a movement is on foot to train a large number.

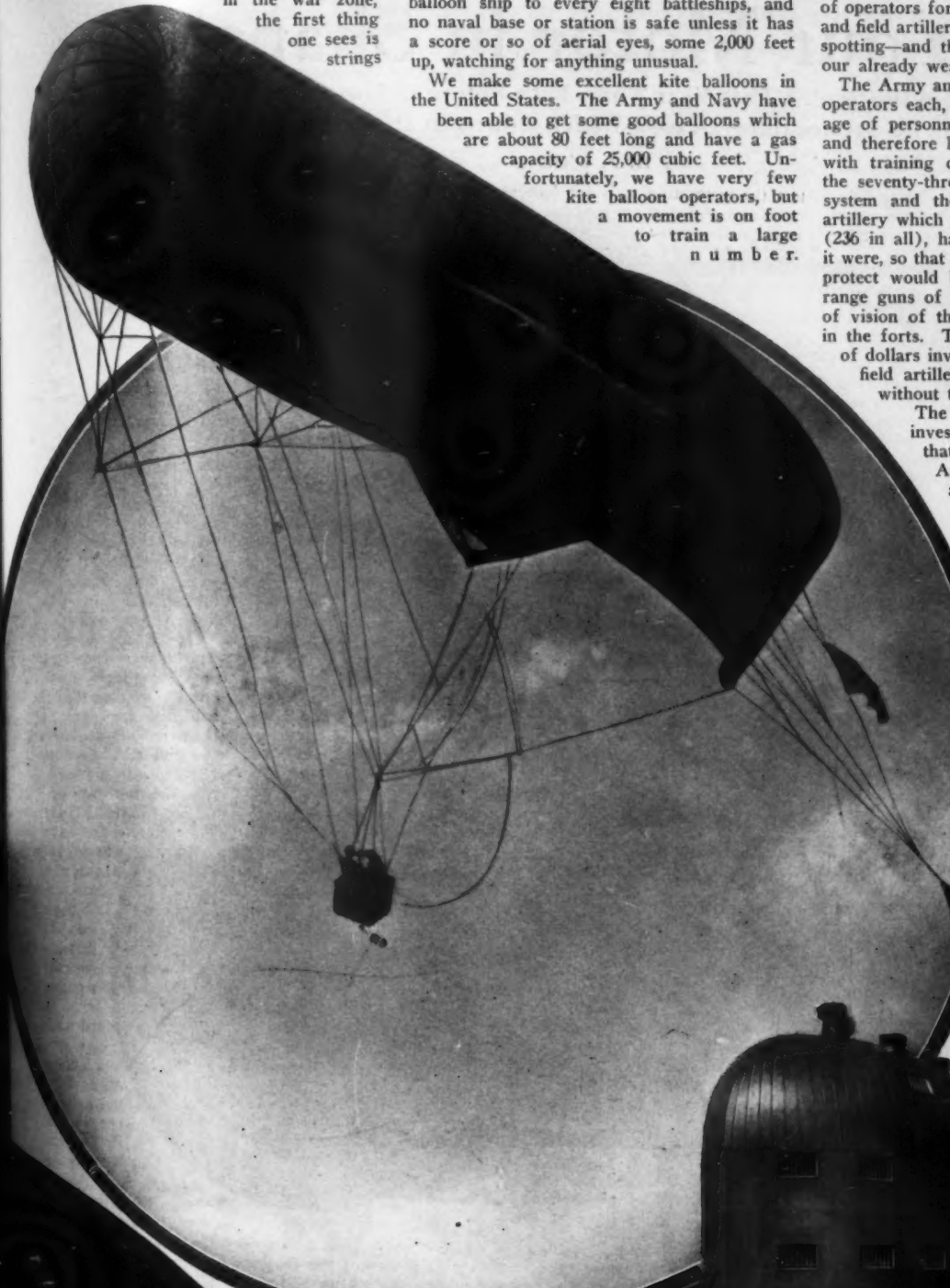
of operators for observation balloons for coast and field artillery, mine planting and submarine spotting—and this unpreparedness undermines our already weak defenses.

The Army and Navy have only two balloon operators each, who, on account of the shortage of personnel, must perform other duties and therefore have not been able to proceed with training other operators. As a result, the seventy-three forts of our coast artillery system and the forty-five batteries of field artillery which should have two balloons each (236 in all), have not one, and are blind, as it were, so that the territory which they should protect would be at the mercy of the long-range guns of vessels lying beyond the point of vision of the artillery observers stationed in the forts. There are hundreds of millions of dollars invested in the coast artillery and field artillery which would be ineffective without the aerial auxiliary.

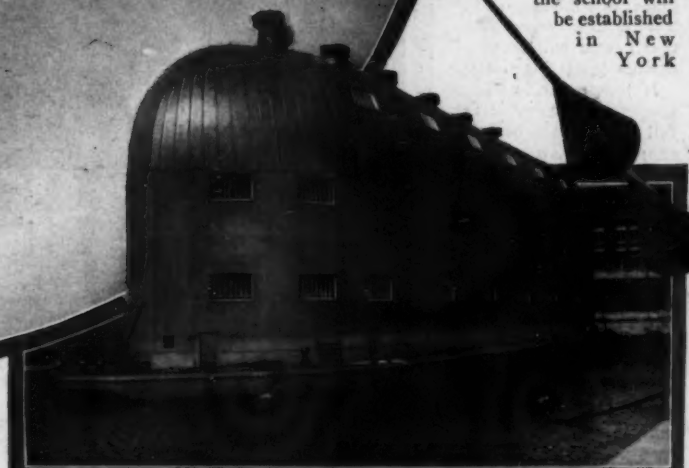
The Aero Club of America, after investigating the matter, reported that owing to the fact that the

Army is overburdened with work at the present time, there are no prospects of getting balloon operators needed this year or next, unless a training school is established on the order of the Plattsburgh training camp, to train civilian operators, who will then join the Aerial Reserve Corps.

The first balloon to be presented by the Goodyear Tire and Rubber Co. was exhibited at the Aeronautic Exposition, at the Grand Central Palace. It is 80 feet long and has a hydrogen capacity of 25,000 cubic feet. It is of the type approved by the Army and Navy. The instructor has been secured, and the school will be established in New York



An observation balloon of the Goodyear type, such as is used by the Army and Navy. The appendages are used to keep the balloon heading into the wind



Front view of the floating hangar of the U. S. Navy for the dirigible DN-1

of sausage-shaped, stationary balloons, which are up from 2,000 to 4,000 feet, from which height the observers keep a

watchful eye on all movements of both sea and aircraft, and report anything unusual to the authorities by telephone. There are hundreds of kite or observation balloons in operation at the different forts. Others are sent up from and anchored to ships some way from naval bases, and still others are secured to ships far out at sea, and from their height have a clean range of vision which permits them to scan the sky for close to 100 miles. No fleet is complete without at least one

"PLATTSBURGH" TRAINING CAMPS NEEDED

As a step towards supplying the much needed operators for observation balloons, a military balloon fund has been started to establish training camps for balloon operators by a patriotic committee of prominent men and women.

These training camps for balloon operators are to be established on the order of the Plattsburgh camps, under the direction of Major-General Leonard Wood, commanding officer in charge of the Eastern Department of the Army.

The present national emergency has found this country entirely unprepared in the matter

immediately. The cost of establishing this school is \$10,000, while the adding of a dozen balloon operators, to train others, will be a most valuable contribution toward the defense of our country. Additional balloons will be presented and schools established as fast as funds are contributed.

It is a fact, acknowledged by the military authorities of the warring nations, that no single factor is so powerful in the war as the effectiveness of the combination of artillery aided by aeroplanes and kite balloons. The daily reports of the military authorities contain brief mention of extraordinary work done by artillery aided by aircraft. Correspondents on different battlefronts tell of seeing as many as forty kite balloons at one time.

Is Your Motor in Shape?

One Should Be More Particular This Year Than Ever Before to Have a Power Plant Which Will Be Serviceable—Details Which Count in the Long Run

By E. J. Stone

WHEN Johnny's pocket begins to bulge and emit a rattle at every step, when little Mary begins the annual hunt for "a nice piece of clothes-line," and when Father begins to bring home various profusely illustrated catalogues, Mother smiles and draws her own conclusions—she knows that spring is here and with it the marble and skipping rope time for the children, while for Father the garden and the boat begin to send out their S. O. S. signal.

Unless Father has an exceptionally strong strain of the old Puritan stock in his blood the garden promptly assumes second place in his estimation. He knows that Johnny can be bribed to spade and weed, but that no one can do the work on his craft, and, furthermore, that no alien hand would be permitted to perform that loved labor. Father knows just what is to be done on the hull and is not in the least worried in that line, but when it comes to the motor—well, that is another matter! Appreciating his dilemma and being desirous of helping him if possible, I give below a few suggestions that I trust will prove of assistance at this time.

If the engine has been properly put away in the fall matters will be a lot simplified. Supposing that the outside has been well slushed and the inside of the cylinders filled up with oil, the first move is to clean up the outside of the motor with plenty of kerosene oil and rags. Screw out the spark plugs and fill each cylinder up with kerosene oil and let this stand for about a week, care being taken when filling to have the pistons as far as possible below the top of the stroke of the cylinders. This will remove the gummed oil from the sides of the cylinders and loosen up the piston rings in their grooves. At the end of a week's time you will find that most of the kerosene has worked down past the rings into the crankcase, so the motor should be cranked over a number of times to free everything up. Open the drain in the crankcase and draw out all the mixture of oil and kerosene; if the motor is provided with handholes in the crankcase open these and dry out the case with a rag. Do not use waste.

With the handhole plates off,

test the connecting rods for looseness on the crankpins. An easy way to determine

the condition of these bearings is to force down the piston by pressing on the top of it through a spark plug hole or valve cap opening and then to pry up on the under side of the connecting rod cap with a heavy screwdriver, noting if there is any perceptible motion when the cap is pried on. If looseness is noticed, remove the cotter pins and nuts from the connecting rod cap bolts and take off the cap, making certain, however, before removing the cap that it and the rod are so marked that one will be able to replace the cap in exactly the relation to the rod that it had originally.

If the rod is fitted with shims, remove one or more (depending on how loose the rod is), and if no shims are used place the cap in a vise and draw-file the surface where it bears against the rod. Put the cap back into place and tighten it down. A rough way to determine the proper fit of a rod without removing the piston and rod and scraping it with Prussian blue is to pry the rod from side to side when the cap is bolted into place. You

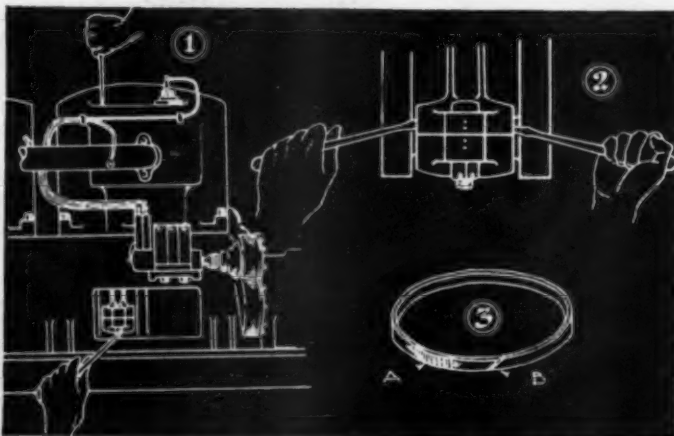
should be able to pry the rod easily from one side of the pin to the other, but there should be no up and down play on the pin. Care must be taken not to get these bearings too tight or the results will be disastrous. Try the main bearings for looseness by prying gently on the shaft and noting whether or not the oil squeezes out between the bearing and the shaft. If these are loose they should be taken up in the same manner as the connecting rods, except that for a test the shaft should be blued in a manner similar to that used in scraping in a new bearing, since it is impossible to pry these from one side to the other as with the connecting rods. Test out the wristpins and their bushings for looseness by applying pressure alternately on the piston from above and below (after the connecting rod bearing has been taken up), and if looseness is felt remove the rod with the piston and replace the worn parts.

If the compression is good



"Father" may not just how to at the finer details his motor but time the job is pistons, wristpins, come in for a major a first step, soak the

at first know tend to all of overhauling he does by the finished. The bearings, and piston rings should share of his attention. As interior with kerosene for a week



Figs. 1 and 2. Testing for looseness in the bearings. Fig. 3. A worn piston ring is indicated by blackened places as at A; the ends should not come together at the split (B) when the ring is put back

after the valves have been ground, do not worry about the rings, but if you find after grinding the valves that the compression is poor in one or more cylinders remove the pistons and inspect the rings. A perfect ring will be found worn bright and polished all around, while a blackened space on the outer face of the ring will indicate that some of the exploding gases have forced their way past, necessitating a new ring.

When fitting the rings, try each in the cylinder, making certain that the ends do not come together at the split (1/32-inch is about the proper gap), for if this occurs the heat of running will expand the rings and possibly score the cylinders. Also take care that the new ring is free to expand and contract and does not bind or bottom in its groove. A stuck ring is worse than none at all and is liable to do considerable damage.

All pipes in connection with the oiling system should be removed and cleaned. Clean out the oil tank and pressure oiler if you use one and see that the sight feed drops are not gummed up.

The packing should be removed in the water pump stuffing boxes and replaced with new, as last season's packing has probably become dry and hard and is liable to score the pump shaft if the packing nut is tightened down. Remove the old grease from all the cups and refill with fresh, making certain that the passages from the cups to the bearings are clean. A quick method of cleaning these is to take a twist drill of the proper size, insert it in the hole, and rotate the drill between the thumb and finger, thus drilling out the old grease.

Tighten all nuts and bolts and replace any broken lock washers or cotter pins. This is not much of a job now and it may save serious trouble later.

Take the carbureter apart and clean thoroughly, (making sure not to disturb any of the adjustments, however), as the very low grade of gasoline with which the general public is favored at the present time is prone to leave a slight deposit in the float chamber after the winter season's standing.

Inspect all wiring for broken or worn insulation, such defects as found being either wound with rubber tape or replaced by a new wire. Remove the spark plugs and clean them. Try porcelain for breakage and reset the gap between the points to that distance you have found to be the most effective.

Remove the breaker box wire from the magneto and with a very fine file square up the magneto points, resetting the gap between these points to that distance recommended by the manufacturer of your particular machine. Remove the cover from the distributor and with a rag dampened with a little gasoline wipe out the inside. Under no circumstances must emery cloth or sandpaper be used inside the magneto or a battery high tension distributor. Square up the points of the vibrating coils and readjust the points.

If dry battery ignition is used as an auxiliary to the magneto, clean out the timer or high tension distributor (depending on which is used), and renew the dry cells. Placing these in a box and pouring storage battery sealing compound around them will materially pro-

long their life. The compound can be used over and over again.

If the points mentioned above are followed out the motor should be in condition for a season's running, unless it has been badly abused, in which case it should be removed from the boat and dismantled. Each part should be then inspected and those worn out replaced, the motor reassembled and reinstalled on the bed.

Some Helpful Suggestions on Spark Timing

By G. A. L. and J. C. S.

TO time or ascertain the instant at which the spark should occur within the cylinders of an engine, determine first the cycle of operation of some one individual cylinder—usually the most accessible, and quick and effective

With the sparking instant known on this individual cylinder, and the firing order of the other cylinders ascertained, it is necessary only to set the revolving segment or distributor so that the current will just begin to flow to this cylinder, and connect the proper wires from the distributor to the other cylinders in the correct order in which they fire, assuming that previously the spark lever or control has been set at midway of its arc of travel.

While this method gives the timing and the sector allows of variations of spark occurrence, the exact instant of current flow in its relation to the cycle will vary, not alone with the different makes of motors, but also with identical motors. The factor underlying the variation is the one of differences in carbureter adjustment, supplying either fast or slow burning mixtures.

Although the velocity at which the motor is revolving means a proportionate advance or retardation of the spark as the conditions warrant, the variations in the density of the gasoline vapors which are affected by carbureter manipulation and temperatures permit of considerable spark range for economy and advantageous results.

Let us assume that 1-100 second is required for maximum pressure to be reached after ignition. If the engine is turning at, say, 300 r.p.m., its crank will move through 18 degrees in 1-100 second. Then, if the spark is located with 18 degrees advance, maximum pressure will occur exactly at dead center as required for maximum power and economy. But, if the r.p.m. is doubled and the spark position unchanged, the crank motion during combustion is doubled and the maximum pressure will occur 18 degrees after dead center with consequent loss of power and economy.

It follows that, ignoring variations in the time of burning, at every engine speed there is a best spark position.

Concerning causes that influence the time of burning, a lean mixture burns slower than a rich one, and low compression has the same effect. Now, when a marine engine is throttled, its compression is decreased and usually the mixture is thinner. These effects are to be met by advancing the spark; but, on the other hand, with throttled mixtures, the engine speed is lower, which requires a retarded spark. That is, the last named influence neutralizes, to some extent, the other two. It should be remembered, however, that any change in the carbureter adjustment is sure to change the best position of the spark.

These various considerations may appear complex, but in practice they may be met by observing the following principles:

1. It is always bad economy to reduce speed by retarding the spark to a point where maximum pressure is produced after dead center.

2. When under way, get your power from thin mixtures and a spark advanced just as far as may be without slowing the engine.

Individual effort is necessary to ascertain the correct position of the spark, or in other words the proper position is found by noting the action of the engine, for much vibration and hammering is indicative of too much advance and sluggishness with loud exhaust and heated motor, of too much retardation.



Last but not least—get the motor settled firmly and accurately in position on its base, if you care anything about future ease of mind

tive results will follow this initial procedure. Then it will be necessary to learn the order in which cylinders fire. To do this on a motor having enclosed valves, the spark plugs may be removed or the release cocks opened and the motor turned over slowly. Note the order in which the air or compression is forced out through the openings, for this will be the firing order of the cylinders. With uncovered valves, the order in which the intake valves (or the exhaust valves) open and close will also be the order of firing of the cylinders.

Now by inserting a suitable rod or wire through the opening above the piston on its compression stroke and stopping the movement of the crankshaft when the piston is at maximum height or at top stroke, the cylinder will be on its firing center.



Some's Sound runs right into the heart of Mt. Desert Island and has high mountains on either side of it. At the right: Mt. Desert, one of the most famous and most beautiful mountains of the Maine Coast

Next Summer's Cruise Down East

East and North From Camden, Me., to Mt. Desert Narrows—Intimate Glimpses of a Majority of the Attractive Harbors Between These Points—Things to Look For on Your Next Vacation

By Norman I. Black

Part III

WITH Dhila resting easy on the laurels won in the bang-and-go-back race we returned to our anchorage in Camden Harbor and made ready for the night. But invitations were shortly received by all to a supper served on the club pier, to be followed by a dance at the Golf Club, so we changed our plans accordingly.

The Camden Yacht Club's house, built on a white concrete foundation with a splendid pier and float and most artistically designed, is one of the very finest on the whole Maine coast. Small tables were placed along the pier and on these a delightful meal was served to the accompaniment of red and green fireworks, with bombs that burst in the air with a glory of colored lights and the noise of a battery of howitzers. Before and after supper automobiles were placed at our disposal to enjoy the lovely rides around this quaint and picturesque town and to the Megunticook

Golf Club, where the dance of the evening was preparing; here Commodore Cyrus H. K. Curtis, of the Camden Y. C., received his guests, whose entertainment was provided through his generosity. A finer ending for the Boston Y. C. cruise could not be imagined, and if it was appreciated by all as much as it was by the crew of Dhila, Mr. Curtis must have been deeply gratified.

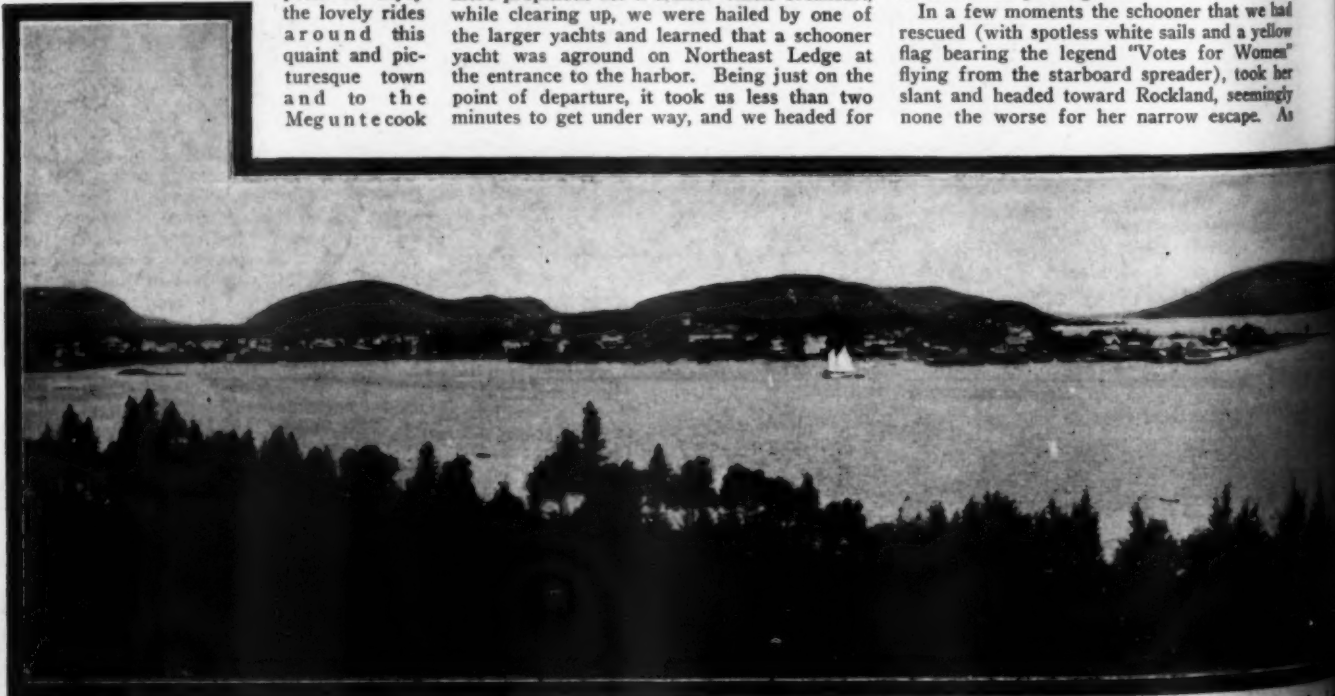
The next morning many of the sailboats left for the long race back to Marblehead, after bidding farewell to their more fortunate friends who were able to continue the cruise farther. We that remained spent the morning in visiting and talking over the many happy days of the cruise, and regretting that we should have to say farewell to those who had made our sojourn with the fleet so enjoyable.

Sunday dawned on weather which was never more propitious for a cruise. After breakfast, while clearing up, we were hailed by one of the larger yachts and learned that a schooner yacht was aground on Northeast Ledge at the entrance to the harbor. Being just on the point of departure, it took us less than two minutes to get under way, and we headed for

the unfortunate vessel which we found to be lying over at a bad angle with all sails set, and rising and falling with the ground swell at one end. It was thought that by keeping her heeled over she might work off, but this failed; so she dropped her head sails and took a line from us, who, assisted by another small boat, worked the bow around into the wind and gradually drew her off the ledges and into the deep water. She was apparently uninjured, as those aboard could find no evidence of a leak.

This was one of the times when we were glad that our engine is a bit larger than is absolutely necessary for our boat. It is always good practice to have so much reserve power that one needn't drive the engine at its maximum rate all the time; the life of machinery is much prolonged by this considerate use, and it tends also toward increased comfort for the passengers.

In a few moments the schooner that we had rescued (with spotless white sails and a yellow flag bearing the legend "Votes for Women" flying from the starboard spreader), took her slant and headed toward Rockland, seemingly none the worse for her narrow escape. As



Southwest Harbor, showing Some's Sound in the center. In this harbor we were hailed by an anxious-looking individual who confessed to being a lost soul.



Bear Island, which guards the entrance to Northeast Harbor and helps make the latter an ideal anchorage. The harbor (shown at the right) is protected by high hills and offers good holding ground

soon as we were sure she was none the worse for her experience we swung our nose toward Pulpit Harbor on North Haven Island. This little hole-in-the-wall, whose entrance is so small that it might easily be passed by unnoticed, derives its name from a high rock which is left to starboard on entering. The rock is one that has been chosen by some enterprising fishhawks as a suitable location for a summer home, their nest resting on the top of the "pulpit." The baby hawks, although just hatched, were canny enough to play dead when we approached, but they promptly came to life when the parent birds brought food.

The harbor is of a curious shape with several long reaches, coves and beaches. At one point there is a small fishing settlement, and at another, rolling pasture land surmounted by high wooded hills with a few summer homes, camps and tents hidden in among the trees. Although only a short run from Camden or Rockland, it is a quiet and secluded spot. Anchoring in one of the uninhabited bays, we packed a large lunch basket and went ashore to have a swim from the sandy beach and a lunch up among the trees on the hill.

After a bit of exploration to obtain the fine view from the hilltop toward the Camden Hills with the blue bay spotted with the tiny white sails of some racing 15-footers, we returned to Dharma. The afternoon was beautiful, although we missed the companionship of the other boats. We passed Barren and Butler

Islands with their many sheep presenting marked contrast to the thickly wooded Eagle and Bradley's Islands, which look as though



Alsorie III and Commander Burnell, to whom we bade farewell at Camden

neither man nor beast had ever set foot on them. Rounding the north end of Little

Deer Isle past Pumpkin Island Light we emerged into Eggemoggin Reach, that favorite sail of so many yachtsmen. But not a single boat was to be seen under way during the afternoon, which for one reason was fortunate, as our bathing suits were drying on the halyards and might easily have been mistaken for distress signals. As the afternoon wore on we kept hearing a peculiar click from the engine which seemed to come from the direction of the circulating water pump, although this appeared to be working properly. The noise periodically diminished until we could hardly hear it, and then came stronger again, yet it was always regular as if with each stroke of the pump. As we were near Naskeag Harbor we ran in and anchored, and after looking at everything else about the engine I unscrewed the swing check-valve on the water intake and discovered the little nut that holds the clapper to be missing, letting the latter go from one end of the valve to the other with a decided snap. It was a wonder that the pump was able to supply sufficient water. We took out the swing check, and as we had no other nut for it, headed the threads down so that it could not get out of place again. When
(Continued on page 64)



Squadron flag with that of the Revenue Cutter Service. His relief when he learned that we were not concerned about his Govern-

Miami Sets New Records

Midwinter Regatta at the Southern Metropolis Starts the Racing Season with High Marks in Runabout and Express Cruiser Classes

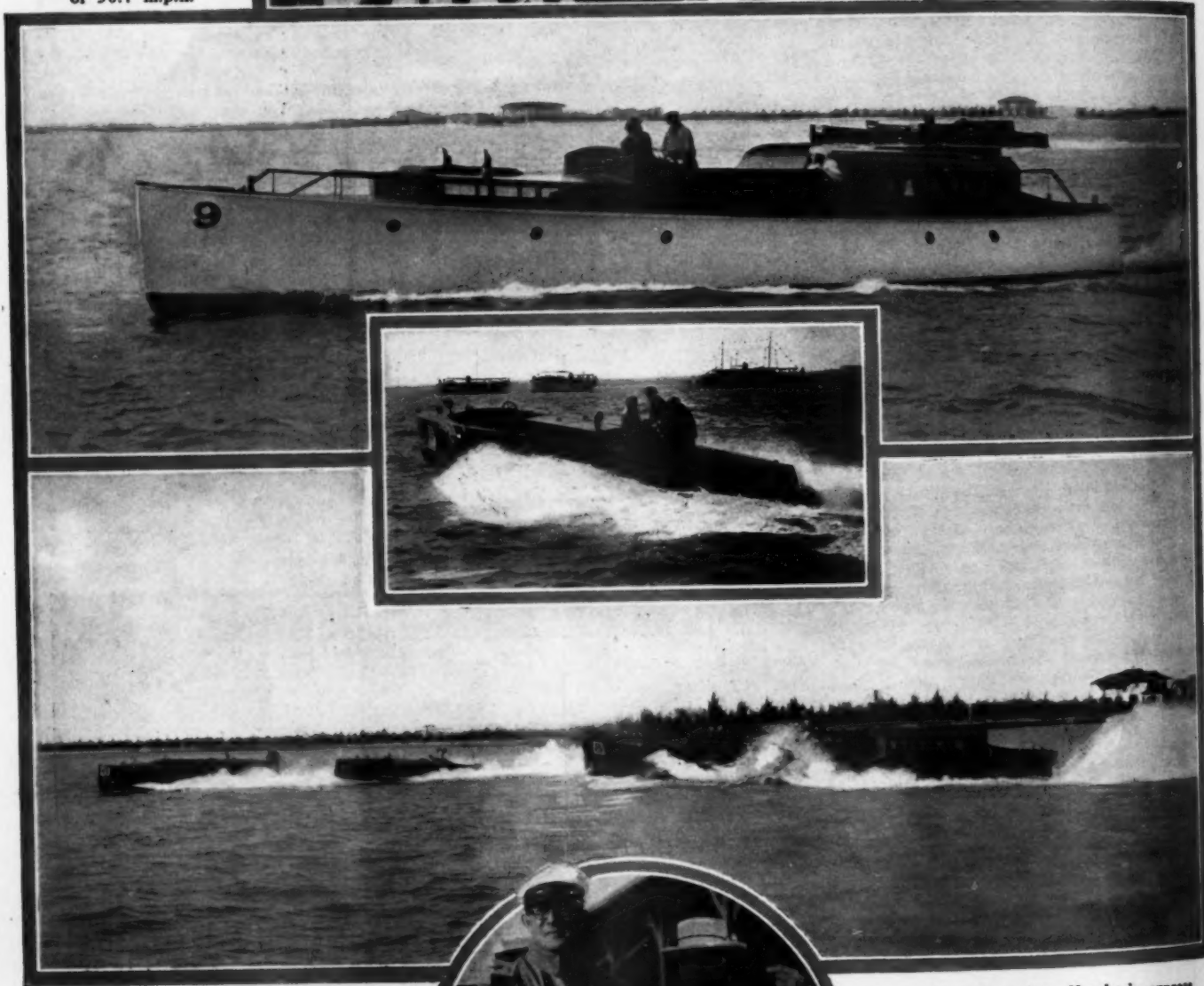
THE herculean efforts of Carl G. Fisher and other prominent winter residents of Miami were amply repaid by the results of the third Midwinter Regatta, held February 15-17, inclusive. One displacement runabout of this year's vintage (Marycel, built by the Albany Boat Corp., owned by Charles Deering, and powered

On the third day of the regatta, Shadow III, owned by Carl G. Fisher (at the wheel), established an unofficial record for the express cruiser class of 30.1 m.p.h.



Weather conditions were practically perfect for the three days of racing, and the crowd which turned out was large and enthusiastically on its toes for all the events. The race that had the distinction of creating the greatest amount of excitement was the free-for-all on the closing day, when Baby Glenn, Shadow III, Raven III, Boomerang, Marycel, and Otagadai competed on handicap. The last named of these did not finish, but the others

Left to right: E. G. Sewell, timer; Rex W. Wadman, starter; W. M. Friebie, chief timer; James Nichols, judge; and Com. C. W. Kotcher, of the Regatta committee



Marycel and Otagadai rounding the upper turn on the first day. Marycel, shown also in the insert, is an Albany displacement runabout, powered with a 400 h.p. Duesenberg. She established a new record for her class of 37.7 m.p.h.

with a 400 h.p. Duesenberg) established a record for her class of 37.7 m.p.h., and Carl Fisher's Shadow III (equipped with two eight-cylinder Speedways) set up a new express cruiser mark with a speed of 30.1 m.p.h. The regatta did not have the sanction of the A. P. B. A., but these reported speeds are considered entirely accurate.



Raven III, Commodore Kotcher's express cruiser, bettered Shadow III on the first day but could not keep up the pace thereafter. In the circle at the left are Carl G. Fisher and Secretary Livingston of the Miami Chamber of Commerce

were so accurately handicapped by the redoubtable Rex W. Wadman and his advisers that they crossed the line within fifteen seconds of each other, Baby Glenn winning. A complete summary of the three days' events, together with the owners and principal specifications of the boats entered was published on page 66 of the March issue of MoToR Boating.

PRIZE CONTEST IN QUESTIONS AND ANSWERS

Overhauling a Marine Motor

An Operation Which, Though Lengthy, Need Not Be Difficult if It Is Undertaken in the Proper Way—Number All Parts, Grind the Valves, and Look to the Condition of the Bearings

THE PRIZE CONTEST—Answers to the First Question in the February Issue

Be Careful and Be Thorough

(The Prize-Winning Answer)

THE best way to secure good results on overhauling your motor, whether one cylinder or four, is to be very careful and thorough in everything you do. With this in mind, the first step is naturally completely to dismantle the motor and clean each part thoroughly in kerosene to cut the grease. As you take it down be very careful to put some distinguishing mark on parts that go together so that you will be able to return them in the right position. A center punch is a very handy tool for this job. I also make a practice of numbering the valves and also the pistons so as to eliminate all confusion when assembling. See that your timer gears are marked so that you will be able to set them in the right teeth again. It is a good idea to have a few small boxes or tumblers handy, in which to put different sized cap screws and bolts. This will save looking them all over in search for a certain size.

If your magneto or carbureter needs overhauling it is a good plan to send it to the manufacturer, who will put it in first class condition.

Examine all your wrist pins and connecting rod bearings for wear. There are generally shims that can be removed on the crank end of the connecting rod so as to take up the wear, but if the wrist pin or its bearings are worn they will have to be replaced.

Your main crankshaft bearings should receive the same attention and if they need taking up remove some of the shims and scrape them in again. In replacing the main bearings the best way to proceed is to scrape the lower halves (if they are split bearings) so that they will fit the curve of the crankshaft, then put them in their position in the crankcase and lay the crankshaft in, after coloring it with some Prussian blue. Rotate the crankshaft and then remove and scrape the bearings wherever they show the blue. Repeat this operation until the shaft lies evenly in all the bearings, then scrape the upper halves to fit the curve of the crankshaft and shim them if possible; if not, scrape slowly until they just fit between the castings. Be sure to drill new bearings for oil or grease and to get the new holes in line with those in the castings.

When you take the pistons out remove the rings and clean all the gummed oil from the piston ring grooves, and then scrape the carbon from the piston heads and from the firing chamber. If your rings need replacing they will show carbon spots on the sides where the explosions have passed them. As these rings are a most important factor in the compression of the motor they should be carefully looked after, so that the engine may deliver maximum power.

If your engine is of the four-cycle type, examine the push rods, guides and camshafts for wear, although there is slight chance of their needing replacement.

It is a good plan, if you have a faucet or hose handy, to run water through the cylinder water jackets to clean out the sediment that is there.

Block up all outlets, except one small one, and use a wire ramrod to help out the water.

When putting your crankcase and cylinder block castings together it is advisable to apply a thin coat of shellac between them. This is especially necessary in two-cycle engines with crankcase compression.

If your cylinder heads are detachable be sure to have good gaskets under them. A little leak in one of your cylinder heads would put you in an awkward position.

All joints in the water and gasoline lines should be well shellacked before putting up; so also the threads on intake manifold.

Four-cycle engines should have the push

disassembly; second, examination of all bearings, parts, etc., and the repair or replacement of any part necessary; third, cleaning, polishing, painting and the making of new gaskets; fourth, assembly and adjustment, and then a trial run.

When taking the motor down, all the parts were so marked that there would be no doubt about getting them together again correctly. One tooth on one timer gear was marked with a center punch, as were the flanking ones on the other gear. The caps on the bearings were also marked with a punch so as to get the right sides together again, and the pump eccentric was stamped. The pistons, connecting rods, and piston pins were notched with a file. All the oily and dirty parts were put in a pan of kerosene and soaked until I had time enough to clean them.

The engine was equipped with bronze split main shaft bearings, and with the shaft in place these were adjusted by removing some thin metal shims, when it was found that the bearings fitted perfectly. The piston pins moved in the pistons, and these bushings were worn, causing a knock, so new bushings were forced in, and the oil holes drilled through them. The lower connecting rod bearings were worn and one was tightened by removing some shims and scraping, but the upper half of the other required rebabbiting. To do this the main shaft was blocked up horizontally about a foot from the floor, and the defective rod was placed under the proper part of the shaft and clamped there, care being taken to get the rod at right angles to the shaft. To get the rod in the proper position the cap had been bolted on and then removed, exposing the space for the babbitt. The ends were then closed with clay, and the metal run into it. After scraping, this made a good bearing. The pump was put in good condition by regrinding the valves and putting in new packing.

Everything was thoroughly cleaned, the painted parts being scraped, sandpapered, and given one coat of the best engine enamel. The water jackets were flushed out, all gasket surfaces cleaned, all the brass tubes of the pressure oiling system cleaned out and polished, piston ring grooves cleaned, timer parts polished, etc. Gaskets were then made from asbestos, wire woven.

All was now ready for assembly. The main shaft bearings were adjusted; the pistons, pins, and connecting rods assembled and then fastened to the shaft, care being taken to get the baffle plates on the proper side; the gaskets were shellacked to the base and graphited on top, and then the cylinders were put down and bolted. Putting the cylinder over the piston was a hard job, for the rings stuck out so far that the cylinder would not go down, even though the lower part had been beveled to prevent this. I solved the difficulty by drawing each ring in with a fine copper wire, leaving the ends long enough to pull the wire off when the cylinder had been worked down that far. New gaskets were shellacked to the cylinders for the manifold (inlet and exhaust were in one casting) and it was bolted in place. The brass piping between the cylinders and the pump was installed and the other attachments

Questions for the June Issue

1. Do you prefer to purchase a marine motor through an agent or direct from the factory, and why?

Suggested by R. B. B., Detroit, Mich.

2. Tell how to make a simple, easily constructed azimuth instrument, pelorus, or other device to take accurate bearings from a motor boat.

Suggested by E. C. L., Phila., Pa.

3. Describe and illustrate a system for a cruiser whereby water for the galley, washing, etc., can be supplied under pressure.

Suggested by D. S. W., Ann Arbor, Mich.

Rules for the Contest

Answers to the questions, addressed to the Editor of MoToR Boating, 119 West 40th St., New York, must be (a) in our hands on or before April 20, (b) about 500 words long, (c) written on one side of the paper only, (d) accompanied by the senders' names and addresses. (The name will be withheld and initials or a pseudonym used if this is desired.) Questions for the next contest should reach us on or before the 20th of April. The Editor reserves the right to make such changes and corrections in the accepted answers as he may deem necessary.

The prizes are: For each of the best answers to the questions above, any article advertised in the current issue of MoToR Boating, of which the advertised price does not exceed \$25, or a credit of \$25 on any article advertised in the current issue of MoToR Boating which sells for more than that amount. (There are three prizes—one for each question—and a contestant need send in an answer to but one if he does not care to answer all three.)

For each of the questions selected for use in the next contest, any article advertised in this issue of MoToR Boating, of which the advertised price does not exceed \$5, or a credit of \$5 on any article advertised in this issue of MoToR Boating which sells for more than that amount.

rods on the valves so set that there is a slight play when they are seated.

I had a lot of trouble through the grounding of my ignition wires on the engine, but found that by running them through a fiber tube I not only remedied this but made the motor neater and more accessible.

A. E. HUNTER, Boston, Mass.

Actual Work on a Two-Cycle

I HAVE just finished assembling a 15 h.p. two-cylinder, two-cycle engine, that I had given a complete overhauling.

The method followed, was: First, complete

When you send in your answers you must state what you will take for a prize should you win one

PRIZE CONTEST

were put on, the carbureter having been cleaned and polished.

The engine was now ready to run, and it was tried out for a very little time to be sure that it was all right. It looks like new, and should give good service for some time to come.

L. R. KELLEY, Philadelphia, Pa.

Parts Requiring Attention

OVERHAULING a motor, though not a light task, is comparatively easy for the motor boatman who is mechanically inclined, and beyond the satisfaction of knowing that the work has been done properly, much enjoyment may be had from it. If convenient, it is much better to remove the motor from the boat, placing it on a bench or frame where it will be easy to get at.

Probably the thing to do first when starting the actual work is to grind the valves, for the reason that with the valves in proper shape

the compression can be tested and if found satisfactory it is safe to assume that nothing need be done to the piston rings. If, however, a cylinder has poor compression and the leak cannot be traced to the plugs, valve caps, or similar places, it is probable that the trouble is in the piston rings and the pistons should be taken out. Remove the manifolds and other parts necessary, and take out the pistons.

Next look to the condition of the various bearings. In most up-to-date motors, the shaft bearings are adjustable and can be reached through handholes in the crankcase. The main bearings can be tested for looseness by prying up on the shaft; if any motion is felt or if oil squeezes out around the edges, they require tightening.

The crankpin bearings are either split or hinged and are adjusted the same as the main bearings. Looseness here may be detected by working the connecting rod in the direction of its length. The wrist pins are usually non-adjustable as they wear a long time on account

of the slight motion occurring at that point.

After inserting the pistons and securely bolting on the cylinders or the cylinder head, the next step is to examine and adjust the small parts and attachments (such as magneto, timer, water pump, carbureter, reverse gear, etc.), and to test wires and connections. Don't attempt to take the magneto apart. Simply clean the distributor contacts and take off the breaker box to file and adjust the contact points, which should break only a trifle over 1/64 inch. If there is a timer or distributor it should be cleaned and its worn parts replaced. Examine all wires, and if any are oil soaked or appear to be weak at the connections, it is advisable to renew them.

The water pump is very important and should be carefully examined and adjusted. The carbureter needs draining and a thorough cleaning. Flush out the reverse gear with kerosene and test the bearings for wear and then adjust the clutch and put in fresh lubricant. ALFRED L. MEGILL, Brooklyn, N. Y.

Types of Bows and Sterns

Cataloguing the Most Popular and Familiar Forms, and Discussing the Advantages and Shortcomings of Each—MoToR Boating's Readers Contribute Valuable Information

THE PRIZE CONTEST—Answers to the Second Question in the February Issue

Bows and Sterns in Common Use

(The Prize-Winning Answer)

CONSIDERING the bows first, we find the clipper, the round or schooner, and the straight. In the last mentioned there are the vertical and raking types, and those with a slight curvature, but not enough to be put in other classes. Any of these can be associated with either a fine or a full underbody, and with rounded or flaring sections.

Taking them in the order mentioned we have first the clipper bow shown in Fig. 1. This style, and its modifications, is seldom found on small boats, and only on craft with masts. Its advantages are: handsome and graceful appearance, seaworthiness, and, in case of collision, the likelihood that the damage of vital parts will be minimized. The disadvantages are: the difficulty and cost of construction, and the weight. This last item is of great importance on small boats, and in fast craft where every ounce counts would prove a serious handicap.

The round, or schooner, bow indicated in one of its forms in Fig. 2, is usually, but not necessarily, associated with rounded sections. While fairly seaworthy, this combination is apt to result in a wet boat, and one that is likely to pound in a sea. With flaring sections it is difficult to keep the weight down and to avoid ungainliness. The advantages are: fairly pleasing appearance, good buoyancy above water and good maneuvering qualities, as the forefoot is cut away, but on the other hand, the displacement forward is comparatively small, space is wasted, and the construction is costly.

The straight bow, whether plumb, raking, or slightly curved is not as seaworthy a design

as the clipper, nor is it as graceful in appearance nor as desirable in the event of a collision. It has, however, the overwhelming advantages of being easiest and cheapest to construct; of keeping waste of space at a minimum; of having the least useless dead weight; and with properly flaring sections, it gives a dry boat. One form of this bow is shown in Fig. 3.

The sterns in common use are the overhanging or fantail, the torpedo, the compromise, and the transom. The first mentioned, shown in Fig. 4, has the advantages of handsome appearance, seaworthiness, and easy steering, particularly in a following sea. On large craft

som, except greater difficulty of construction and cost, it is no wonder that it has been superseded.

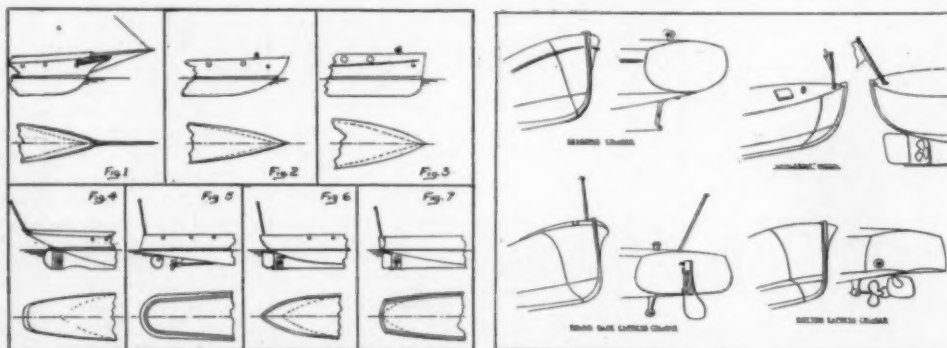
The term compromise, after having been given to a variety of types, seems finally to have come to mean a type as in Fig. 6. It has good carrying power, can be built with fair S sections and is seaworthy. One form is used in the present United States destroyers, but these are comparatively large craft and it is in such vessels that it attains its value. The disadvantages are: loss of valuable space unless the hull is very deep, small deck room aft, and cost and difficulty of construction. These

overbalance the advantages which also include good steering and fair carrying power when excessive speed is not required.

This brings us to the transom stern which has many forms, such as square, rounded, V, raking, etc. This, however, is a matter of appearance. When built with a flat bottom, it has all the vices and virtues

of the torpedo stern. The former are unseaworthiness, ugliness, and a bad steering, especially in a following sea. The virtues are, of course, great carrying power and a full flow of practically undisturbed water to the propeller—both very important in highly powered craft—and also that much space is secured aft, both in the hull and on deck.

When built with S sections aft, it resembles and has many of the features of the compromise stern. Whatever form it may have, however, it has these advantages over all other styles of stern: it is the easiest and cheapest to build, a point of great importance to the average boat owner; it enables the designer to get deck and hull room aft, and cuts to a minimum the useless dead weight. Although it is not as seaworthy a design as the fantail and even a master at the art cannot give it dignity nor grace of appearance, the favorable



Aloys Brambach (left) and Allan O. Goold (right)—Illustrating the commoner types of bows and sterns

good deck space is secured, and the waste of interior room is not felt as, because of the motion and vibration, cabins are not desired 'way aft. The disadvantages, all exaggerated on small boats, are loss of space—even the deck space is not available for practical use—cost and difficulty of construction, weight, and the tendency of this stern to "suck down," this being apparent to an excessive degree in fast boats and resulting in an abnormal waterline. It is also almost impossible to give the propeller undisturbed water to work in, these last points being fatal to speed.

The torpedo stern (Fig. 5) was once used on torpedo craft, whence the name, and shows the tendency to pass from one extreme to the other. It is in "common use" largely because it was once built in large quantities, but as it possesses no advantages or disadvantages that do not apply equally to the flat-bottomed trans-

PRIZE CONTEST

qualities will be found to outweigh the objectionable features.

To my way of thinking, this type of stern, one form of which is indicated in Fig. 7, should really be called the compromise, as it is more adaptable, and can be made to compromise better between the various advantages and disadvantages than any other style. This may explain its great popularity.

ALOYS BRAMBACH, Scarsdale, N. Y.

Simplicity and Utility the Modern Aim

SEAMEN formerly judged both the speed and sea-going possibilities of a model largely by the midship section, but in these days of light draft, high-powered small craft the bow and to an even greater degree the stern play a very important part in determining the performance of the boat.

Theoretically, a hull with both ends alike should be a better sea boat than one having asymmetrical ends. The whaleboat, the dory, the seine boat, and the lifeboat, all rough water models, are designed in this manner. All are excellent sea boats and most successful when driven at moderate speeds. When speeds increase, however, the after lines must be flattened and the forward lines fined to avoid the radical change of trim which such vessels are subject to when over-driven. For this reason the whaleboat or canoe stern is nowadays seldom used, as the almost universal demand for high speeds in craft of all classes renders this once popular model unsuited to modern requirements.

The square transom stern, raking but slightly, is to-day the choice of the majority of naval architects. If the vessel is intended for sea-going purposes the deadrise is generally quite pronounced and the transom is kept fairly narrow. Boats intended for high speed in smooth water are given a broad, flat afterbody with quick bilges.

The popular and speedy V-bottom model

when viewed in profile shows a nearly plumb stern. Considerable flare and usually a pronounced flam are apparent above the chine. Below the chine the entrance is extremely fine, with concave sections extending way aft. The stern is usually the broad transom type, either flat or with a rounded surface and raked scarcely at all. This model, which is generally lightly built and heavily powered, runs with the forefoot clear of the water and virtually planes at the higher speeds.

The high-speed round-bottom model also has, as a rule, a plumb stem and vertical transom stern. The entrance is very sharp with U rather than V sections under water and extreme flam or severe flare close up to the deck. The draft is kept light and the after lines are made as flat as possible with scarcely any deadrise. This model also planes or approaches it when driven at extreme speeds.

aft by the representative designers. They serve no useful purpose and add to the expense and difficulty of construction. The clipper bow and long after overhang of the steam yacht type, the tramp steamer effect in miniature with the elliptical stern, and even the Normand V transom once so popular are now represented by only a few scattering examples. Simplicity combined with utility characterizes modern designing, and efficiency is the watchword. ALLAN O. GOULD, Portland, Me.

Seaworthiness the First Essential

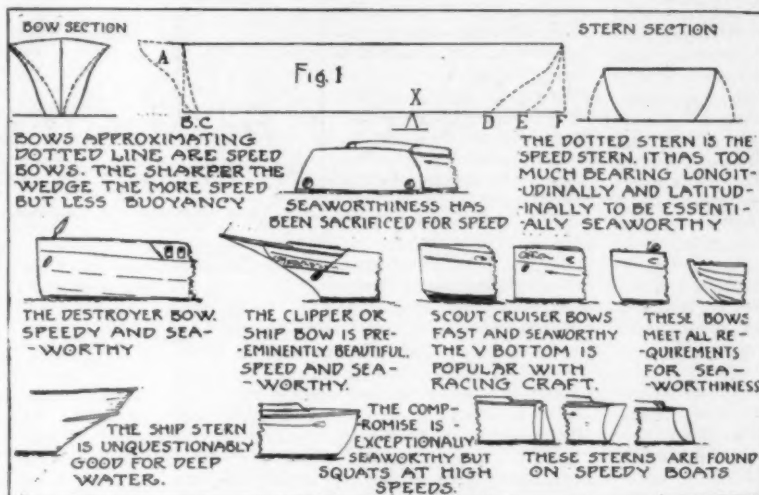
EXCEPT in the case of an out-and-out racing boat, seaworthiness is the first essential. In this sense seaworthiness is meant to imply that a boat is able to navigate rough waters in safety. Happily, in these days there are many instances of seaworthiness and extreme speed found in the same boat.

The bow and the stern play an important part in all that goes to make a boat seaworthy and at the same time speedy. Speed is dependent upon horsepower, the ability of the boat to plane, or to knife its way through the water on account of fine lines.

There is no set type of bow that is accounted speedier than another if we may judge from the types of bows on the ultra speed craft, but there is such a stern and that is the broad flat type that gives to the boat the bearing that it must have.

As to seaworthiness, Fig. 1 will illustrate the factors that go to make a hull seaworthy through the medium of its bow and stern. In a head or a following sea a boat is virtually a see-saw that rockers at the point X. It can be readily seen that as the bow rises the stern must go down. If not, it rises simultaneously with the bow and that presupposes that the boat is "fast" on her feet—too much so to be called a first-class seaboat.

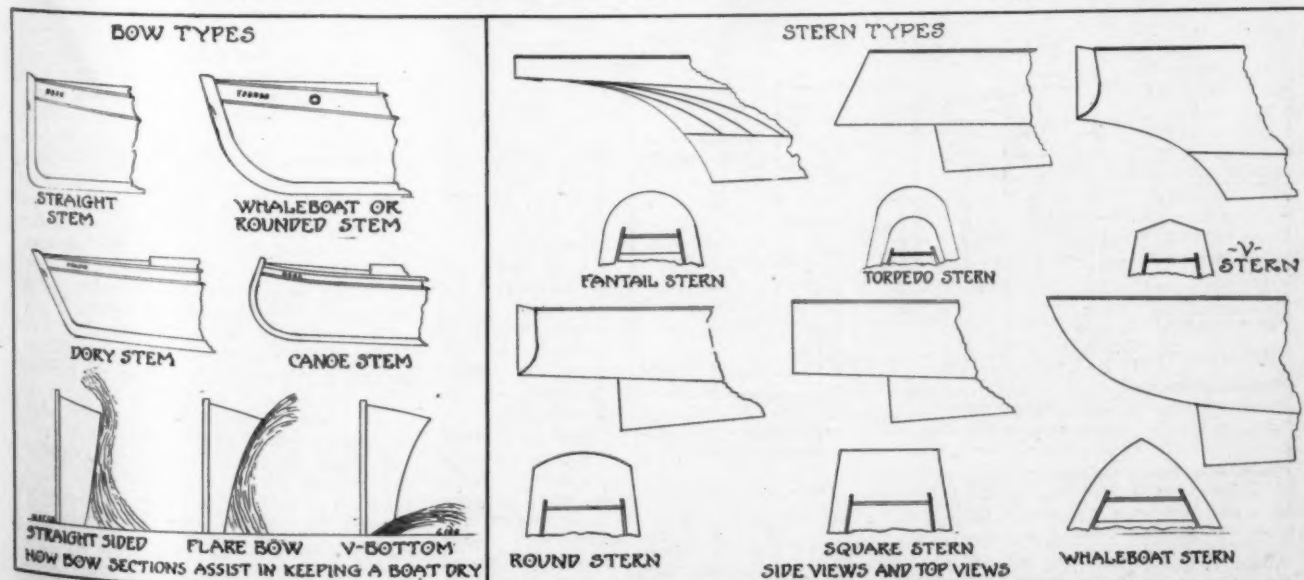
(Continued on page 62)



James L. Murphy—Emphasizing the cardinal virtues of the various types

Sea-going models are given considerable flare forward but the exaggerated flam used on the fliers is not necessary and causes the boat to bring up suddenly when driving into a steep head sea. Good deadrise is apparent the whole length of the hull. The transom stern, rather narrow in proportion to the boat's beam, and with moderately high bilges, is now regarded as the best choice for a rough water cruiser.

Overhangs are not used either forward or



Albert T. Gray—On the design of the stern more than that of the bow depends the excellence of the boat

PRIZE CONTEST

Timing the Ignition System

How to Do It on Two-or Four-Cycle Motors with Magneto or Battery Outfits—Explanation of the Principles of Spark Timing and the Evils Resulting From Ignorance of Them

THE PRIZE CONTEST—Answers to the Third Question in the February Issue

Late Spark Wasteful

(The Prize-Winning Answer)

THE proper timing of the ignition spark is really quite simple when once the principle is understood.

When the spark is produced before the piston reaches the end of the compression stroke in the cylinder, the spark is said to have been advanced. When produced after passing upper center and starting on the downward stroke it is retarded or late.

Nearly all timers used with vibrator coils, as well as the circuit-breakers on magnetos, are arranged with a certain amount of adjustment so that the spark may be advanced or retarded while the motor is running.

To set the timer, turn the engine over until the piston is at the end of the compression stroke or on the upper center. In two-cycle engines all upward strokes are compression strokes; in four-cycle engines, only the upward stroke following the closing of the intake valve. To determine when the piston is at the top of the stroke, remove the spark plug (if it is above the piston), insert a small stick or rod and turn the flywheel until the highest point is located. Where this plan cannot be followed, remove the handhole cover in the crankcase and note the position of the crank arm. Having thus determined the exact upper center or end of the compression stroke, and with the piston in this position, set the timer so that the adjusting lever will be central when the contacts are closed in the timer, or just opening in the circuit breaker of the magneto.

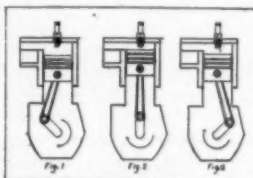
To retard the spark, move the adjustable part of the timer in the same direction that the rotating part moves; to advance the spark, move it in the opposite direction.

Start the motor with the retarded spark to prevent back-kick, and advance the spark slowly while the motor increases speed. Should the spark be advanced too far, a point will be reached where ignition will take place while the piston is considerably below the upper center. In this case pressure is exerted downward

against the advancing piston, tending to stop or reverse the engine, this being prevented up to a certain point by the momentum of the flywheel. From this it should be clear that while advancing the spark up to a certain point increases the speed and power, still greater advance beyond this only results in back pressure which must be overcome by the energy of the previous power stroke stored in the flywheel.

In working against the pressure on the piston, this energy or stored power of the flywheel causes extreme stresses and pressure on the connecting rod bearing and crank, producing a pounding noise easily detected by the trained ear.

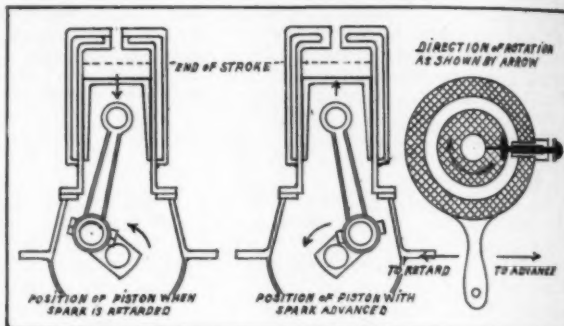
While a certain advance of the spark increases power, too great an advance is decidedly injurious, so the question which naturally arises is how to adjust the spark for the best results. There are at least two ways to determine this. Some, having an eye and ear trained for the work, can quickly tell when the engine has reached top speed. A still greater advance does not increase the speed, but produces pounding which this ear quickly detects, so the spark is then slightly retarded until the engine runs smoothly. The other way is to use a revolution counter and continue to advance the spark until the highest revolutions are obtained, provided the engine runs without laboring or pounding.



Gray—The three firing positions

Setting the Timer

THE only tools necessary for setting the timer on a gasoline engine are a screw-driver and a piece of stiff wire. Remove the spark plug and set the timer control lever



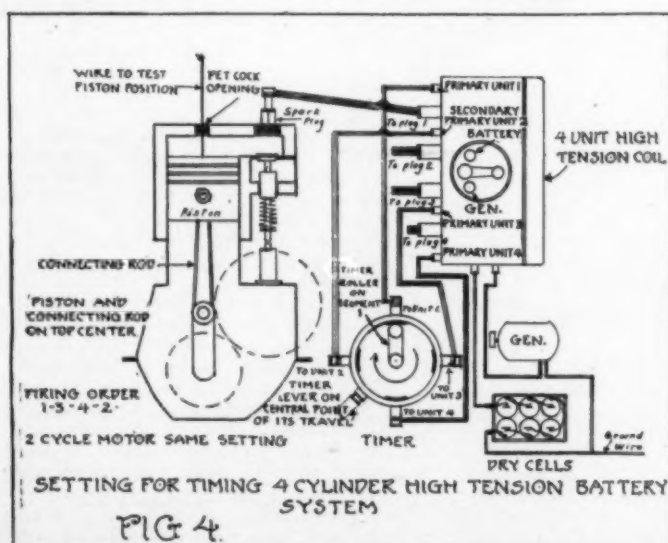
C. H. Christie—Positions of the cylinder and connecting rod on advanced and retarded spark

in the starting position. This should be at full retard. Now locate the piston in the cylinder with a piece of wire by turning the engine slowly in the running direction and watching the wire. When the piston has traveled down about 3/16 of an inch, loosen the set screw which holds the rotating member of the timer to the driving shaft; turn this member until the brush just makes contact with the segment in the housing and then tighten the set screw. The timer is now set.

If the engine has but one cylinder, no mistake is possible. In a two-cylinder engine, the second cylinder will fire when the timer has traveled 180 degrees. A three-cylinder machine will fire in direct rotation, the cranks being 120 degrees apart. With more than three cylinders, however, the firing order is not according to the arrangement of the cylinders. But if the timer is correctly set for one cylinder it will be correct for the others, provided the leads are connected in the right order.

The above discussion applies alike to two and four-cycle engines, if it is kept in mind that the timer should make contact at the beginning of the power stroke. In the two-cycle engine, each down stroke is a power stroke, while in the four-cycle, the alternate strokes are productive. The power stroke may be told from the intake by the fact that both valves are closed.

To understand the effect of retarding and advancing the spark, it is necessary to consider what is going on inside of the cylinders. When a mixture of air (or oxygen) and gasoline vapor is compressed, it becomes highly explosive. Fundamentally an explosion is a sudden expansion, but in all explosions a certain time elapses between the actual ignition and the maximum force. When the mixture of air and vapor is fired by an electric spark in an engine cylinder, and explosion takes place, the products of combustion have a volume many times that of the original charge and produce a force which pushes the piston down. The function of the spark advance is to apply the maximum force of the explosion at that point of the piston's travel at which it will produce the greatest power or push. To give the maximum output per unit volume of gasoline, the force of the explosion should



Albert T. Gray, Dover, N. H.—A series of illustrations without text. Fig. 4 explains the timing of a battery system with low voltage generator. See page 25

The advance required for a certain motor is best determined by experimenting in this way, because the location of the spark plug, the speed of motor and the mixture used all exert their influence.

It is necessary to advance the spark for speed, power and fuel economy, because a certain element of time is required after the circuit is closed for the vibrator to act and the resulting spark to ignite the charge and produce power above the piston.

C. H. CHRISTIE, Saginaw, Mich.

PRIZE CONTEST

be applied just after the crank passes the dead center.

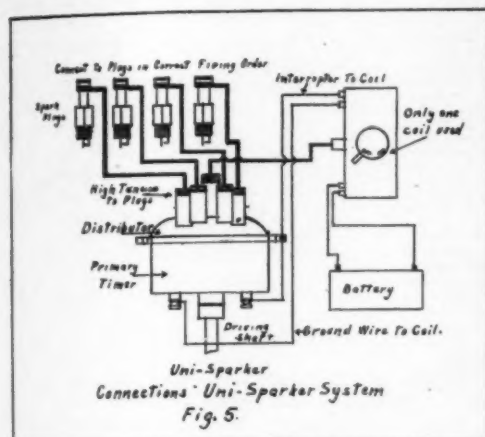
The time element of the combustion is the same regardless of the piston speed. Therefore, in order to get the full available power, the spark must be advanced farther and farther ahead of the dead center as the piston speed increases.

Let us consider the formula for horsepower:

PLAN

$$H.P. = \frac{33,000}{L A}$$

For any engine $\frac{33,000}{33,000}$ is a constant.



Gray—Fig. 5. The Uni-sparker has but one primary wire for the contact breaker

If now, we set the throttle full open and apply such a load as to give a definite speed, any increase in the load will cause the speed to drop. We can bring the speed up by advancing the spark. This, of course, means increasing P which is the mean effective pressure in the cylinder during the revolution.

From this it is seen that the horsepower output varies directly as the mean effective pressure, which in turn varies directly as the amount the spark is advanced.

From the above it may be seen that at constant speed N the gasoline consumption per hour is constant. As the load increases at this speed, the output in horsepower per hour per gallon increases.

Each engine has its definite point beyond which the spark cannot be advanced without decreasing the speed. Such curves, plotted between degrees advance and gasoline consumption, have been run on certain types of engines and may be found in most technical works on gasoline engines.

H. H. B., Schenectady, N. Y.

Timing the Four-Cycle Motor

THE timing devices of the various types of ignition outfits are driven positively from the crankshaft either by gears, silent chains, etc., or as in some two-cycle motors, by being mounted directly on the main shaft, thus securing a definite relation between the occurrence of the spark and the cycle of the motor. When this fixed relation has been disturbed in repairing or overhauling the engine, proper timing may be secured in the following manner:

First examine the gears on the timer shaft for punch marks on the teeth which will indicate the proper meshing of the pair. If the gears are not marked, rotate the motor by hand to the firing position for the first cylinder. For a two-cycle motor this is with the crankshaft on the upper dead center of any stroke. For a four-cycle motor it is the top dead center after the compression stroke (the

compression stroke being the upward stroke during which both the inlet and exhaust valves have remained closed, provided the valves are properly timed.)

Now disconnect the timing gears and place the spark control in a position midway between full advance and full retard. Have the high tension wires disconnected from the spark plugs and supported by means of a piece of dry wood so that they will lie on top of the cylinder with a sparking gap of about a quarter of an inch between wire and cylinder.

Now rotate the timer shaft by hand very slowly until the spark is seen at one of the wires on the cylinder. The rotation must be in the running direction, and must be stopped immediately after the spark is seen. Now slip the gears in mesh and fasten the wire that sparked to the first cylinder, which is then properly timed.

Now to determine the sequence of firing order of the cylinders, considering the forward cylinder number one: This is done by removing the handhole plates over the valve springs, and observing the order in which the inlet (or exhaust) valves lift open, while rotating the motor slowly by hand. In the same way determine the spark order of the remaining high tension wires, and as they spark in succession connect them to their respective cylinders.

The above method will work on any motor having even intervals. For two-cylinder, four-cycle motors firing on 180 and 270-degree intervals the same method holds good excepting that the first of the wires sparking in rapid succession must be timed with the cylinder which fires first in the two successive explosions.

In relation to power and economy of fuel, the proper advancing of the spark is very important. The power developed by marine motors is, other factors being equal, directly proportional to the length of the stroke, as may be seen by inspecting any horsepower formula.

Consequently, running with a retarded spark, retarded any more than necessary for smooth operation, is equivalent to reducing the length of stroke, and results in a proportional loss of power. At the same time the amount of fuel being consumed is more than that necessary to maintain the reduced speed at which the motor is running (with retarded spark) were the full stroke of the motor utilized and the throttling done through the carburetor. This is due not only to wasted stroke length, but also to the fact that the mixture is not fired at the point of highest compression, and is therefore more sluggish in explosive force.

I have seen motor boatmen operate their motors entirely with the spark control, never touching the carburetor throttle, not only resulting in a waste of fuel, but adding to carbon troubles as well, as a mixture exploded in

high compression will burn very much cleaner. Though very small, there is an interval of time between the closing of the timer contacts and the passage of the spark in the cylinder, also between the starting of the explosion at the spark, and attainment of maximum explosive force. These intervals are constant for all engine speeds, so it will be seen that a spark adjustment that fires the charge on dead center at low speed of the motor will actually fire it late on a high motor speed, and an adjustment that is just right for a high speed will cause knocking when the motor is slowed down.

W. ELMER MOTZ, Philadelphia, Pa.

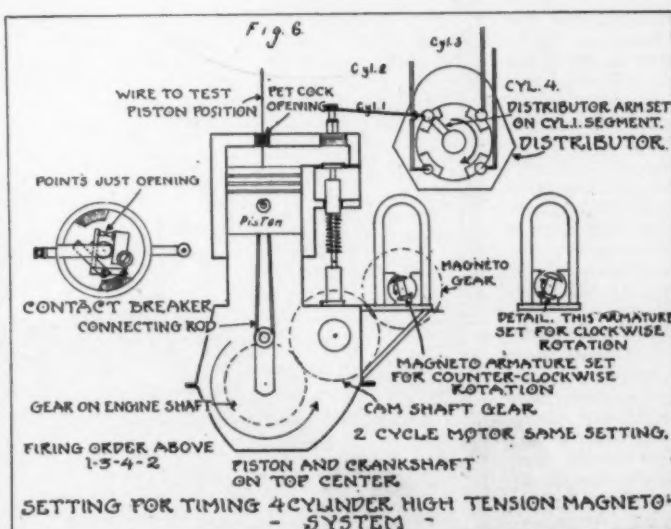
Explanation by Analogy

IF you have ever ridden a bicycle you will readily appreciate the importance of the timing of the ignition of a motor. You will remember how you were able to accelerate your wheel as long as you could get a good kick into the pedal just as it passed the top of the stroke. The faster you went the more important it was to kick hard and quickly at the top.

Now in the case of the motor an appreciable interval of time is required for the complete firing of the charge in the cylinder after the spark is set off in the ignition apparatus. A fixed, or automatic, spark control is often used on motor cars, but for marine work it is best to have quite a range of spark control since, in this case, the motor may carry fairly heavy and steady loads over quite a range of speeds. The duty on the marine motor is heavier than in the case of the automobile so that correct timing may cut a bigger figure in efficiency.

Late ignition means loss of power and slow speed, which results in the use of too much fuel in the endeavor to get desired speed and power. This produces an excessive amount of heat in the cylinder, causing carbon.

On the other hand, early ignition will cause knocking and consequent loss of power, due to the fact that the explosion takes place before, or while, the crank is on dead center. The proper point for ignition can best be determined by trial. When the motor is running at the desired speed, advance the spark



Gray—Fig. 6. Method of timing a magneto system, all parts being in the correct position

until a slight knocking is heard and then retard slightly or until the knocking disappears.

A motor may operate efficiently with a certain spark advancement, but give greater power, required for heavy running, when it is retarded slightly.

LOUIS R. LEE, Columbus, O.

MY IDEAL CRUISER

~ No. 3. White Cap ~

Introducing a Trim Little 26-Footer, the First Auxiliary of an Interesting Series of Cruisers

By Edwin W. Kendrick

DOWN along the coast of New England a man was building boats—boats for service, mostly for the fishermen, and nearly all dories. Even when a round-bottom boat did leave his yard, she had the sheer, the bow, and the stern of his dories and some peculiar affinitive likeness to them in her very lines. They were seaworthy craft, such as men need who earn their living from and upon the waters of those parts.

At the time that this practical builder was turning out a type of craft that was characteristic of the locality and which he had learned from his earliest childhood to build particularly well, another man was designing his ideal cruiser—and in the blueprints she was some boat. He had her built at a good yard along the Sound, but by the time the hull was finished and the engine bought, he realized that the cost of completing his yacht inside was a matter that should have been given more careful attention before a craft of her size was commenced.

He learned too (and this is of much more import to us just now) that the boat that figured out to be such a wonderful little ship on paper was somewhat tubby as an actuality. Greatly so, most people thought, though I cannot agree with them, for it was I who bought the boat when he was through with her; when this same amateur, who had more money than I, had designed yet another boat. In the new one he fined down the lines of the first, took a couple of tons from the iron in the keel and reduced the sail area proportionately. Then by shortening the cockpit, chopping two or three feet from the stern and leaving the jiggermast off entirely, he had a handy little sloop

THE baby of the Ideal Cruiser fleet, and the first auxiliary—these are two of White Cap's prime distinctions. She is a comfortable little craft with the generous beam and accommodation of a sailboat, and from her photograph, she strikes us as being a boat for which any owner would entertain a growing affection.

As she is a dory-type craft, and as her hull is almost the duplicate of a built-for-business fishing boat, there is no question of her seaworthiness. In that commodity termed speed, however, she is lacking—though, in the opinion of her owner, this is to her advantage. For that matter, he considers her a small assortment of perfection. Which is as it should be, for only when such is the case are Ideal Cruisers deserving of the name.

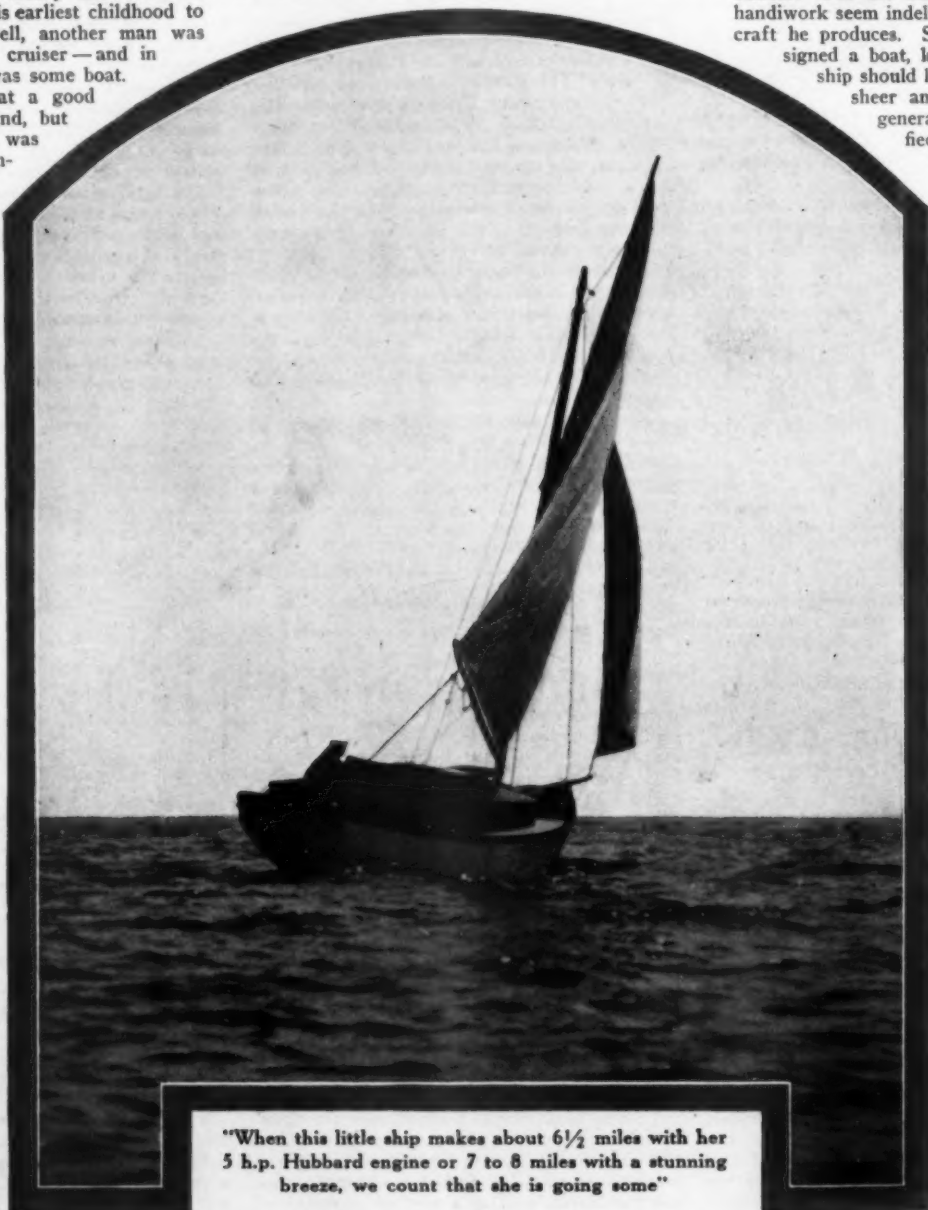
If, however, your ideals differ, you still have thirty days in which to submit the plans and description of your own cruiser. Aside from the solid satisfaction of spreading your gospel before motor boatmen, there is the \$150 prize to be considered. Read the conditions on page 29.—Editor.

amply large enough for himself and his limited family to stay aboard comfortably over week ends, and capable of taking out parties of six or eight if the occasion arose. She was a little ship, too, that he could handle easily himself should a crew, as is so often the case, not be forthcoming. Not only that, this new craft made much better time with the same engine power that the heavier one had.

When a man designs his own boat, if he does not build her himself, he finds it nearly as big a job again to get the right builder. For the marks of each builder's handiwork seem indelibly stamped upon the craft he produces. So this man who designed a boat, knowing only that his ship should have something of the sheer and somewhat of the general shape of the dory-fied craft that come from the yards along the coast of New England, looked for his builder in those parts—and chance led him to the place of the ship carpenter whom I first mentioned.

The meeting of designer and builder is secondary to the meeting of their product, for standing right there in the yard was the hull of our designer's craft, built for a fisherman—line almost for line. There were slight differences, it is true, but the designer decided that they were in favor of the New England boat and placed his order right then and there for a duplicate of the hull standing in the yard; giving her instead the finish of a yacht and installing within her such arrangements as he considered suitable.

From such things do ideal cruisers emanate—and from the foregoing came the little craft that I am now showing you. Through a lifetime spent in sailing all sorts of



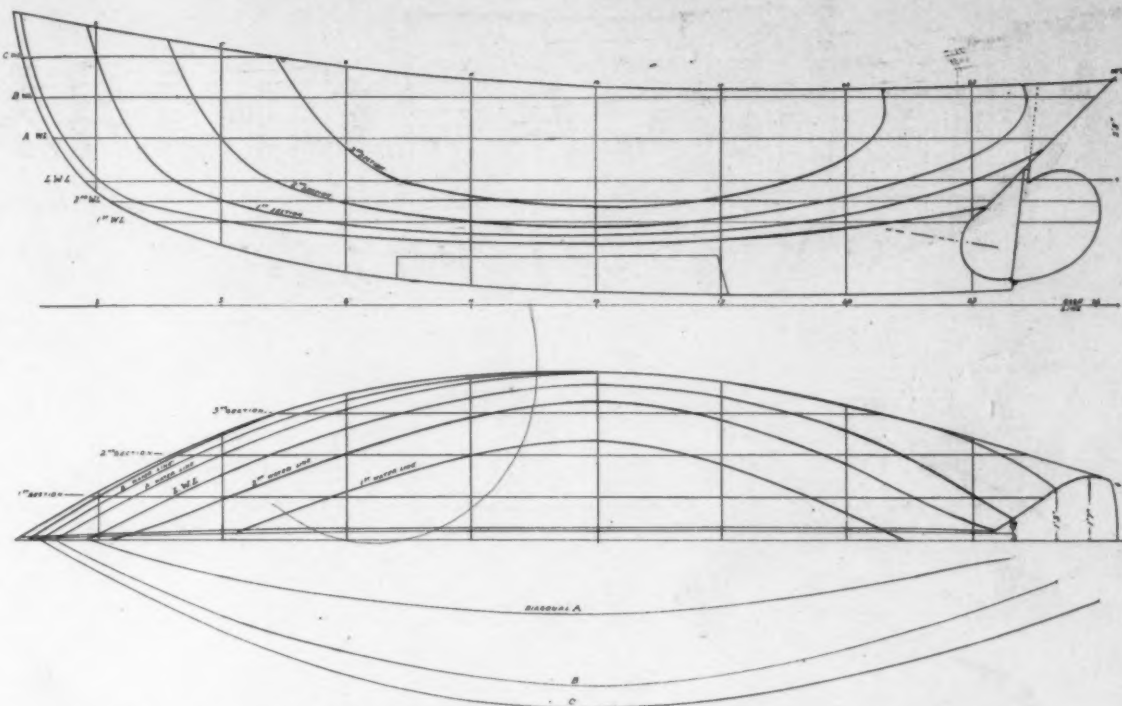
"When this little ship makes about 6½ miles with her 5 h.p. Hubbard engine or 7 to 8 miles with a stunning breeze, we count that she is going some"

boats in all corners of the world, capped with ten years sailing on and tinkering with or owning most of the types of craft that grace (or otherwise) the waters adjacent to New York, I had come to a stage where I had formed a pretty clear conception of the style of boat that most appealed to me and that best served my purpose. So when my friend who had designed a boat commenced sending pictures and blueprints of his new acquisition, dwelling at length upon her achievements and upon the accommodation he had secured in a boat so small, I knew at last that to him the credit belonged for finding the builder who could turn out just the type of boat I wanted. Thus, when September came around, I (having disposed of the boat that some thought tubby) placed an order with the same builder to produce yet another such hull around accommodations that I, in the meantime, had drawn up and considered possible and even more desirable.

Well, those same plans are printed here in MoToR Boating and you can see what we got into a craft 26½ feet over all. All the accommodations as designed worked out to the inch. The upholstery, curtains, and odd fittings were made here in New York last winter while the boat was being built down in Massachusetts. She was originally ordered to be only 25 feet, as may be seen from the measurements on the accommodation plans, but she ran a bit longer in the building, the additional eighteen inches being used up in the cockpit and in making a better stern to the boat. And I have since found out in designing the hull we have before us that this little addition to the length made it possible to make a much better job when installing the engine.

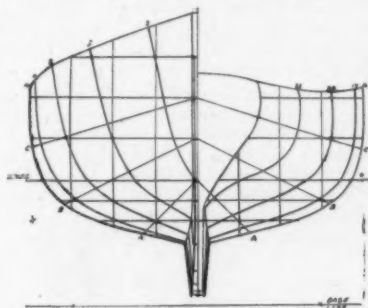
The little ship made her maiden trip last year when we sailed her early in the season from the builder's in New England to her home port in New York. That was 350 miles as we sailed and motored it, in all sorts of weather. The daily runs were from fifty to seventy-five miles, and we were always at a snug anchorage before sundown with a smoking hot dinner on the cheery little coal range and often fresh fish sizzling in the pan—fish that we had caught ourselves since making port.

But before I go further, let me tell you that the lines and the construction plans shown here in conjunction with the accommodation plans as laid out for the craft I had built last winter are drawn up especially for MoToR



Lines of the 26½-foot auxiliary cruiser White Cap, reproduced to the scale of ¼ inch to 1 foot

Boating, and do not come from the man who builds boats down East. They may not, therefore, produce exactly the same boat, but mathe-



Body plan of White Cap

matically the general dimensions are based upon the same measurements as were called for in the boat already built, and they are the

lines of my Ideal Cruiser which would be so similar that I do not know that there would be any difference.

I have mentioned all the foregoing that you may feel creditably sure that the craft here illustrated is a good investment and that the accommodation shown is practicable—which was doubted by some before my own boat was built.

You will see that there is all the accommodation and cabin space to be found generally on a craft of half again her size. By means of a raised hatch which also supplies ample ventilation for the cook, full headroom is procured forward where it is most necessary. A mosquito framing fits around this aperture when its use is desirable. At other times it unhooks, slips out, folds up and is stowed away forward. There is also headroom under the companionway, which is built as long as possible for the space available.

Although we have a cheery little Shipmate to warm the cabin on chilly nights or cook a good meal any time and use a little Primus

for light lunches or rush meals, I have shown an arrangement for any double-burner stove.

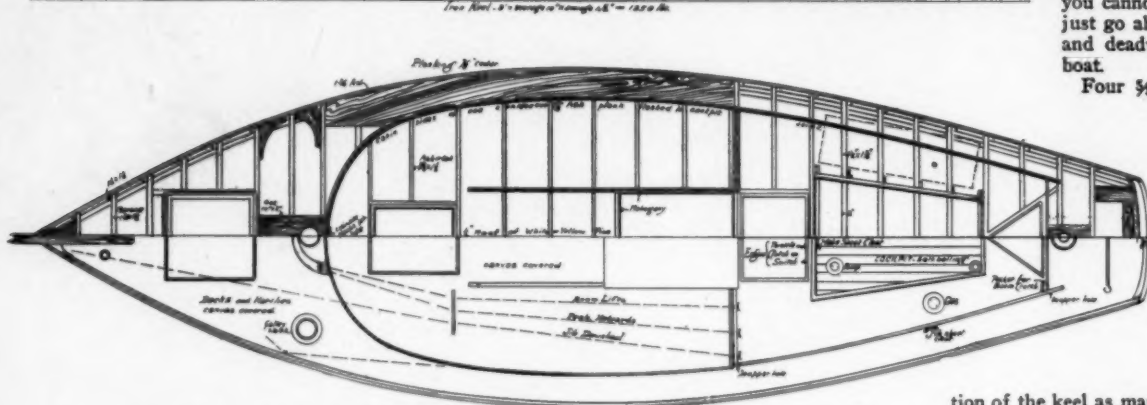
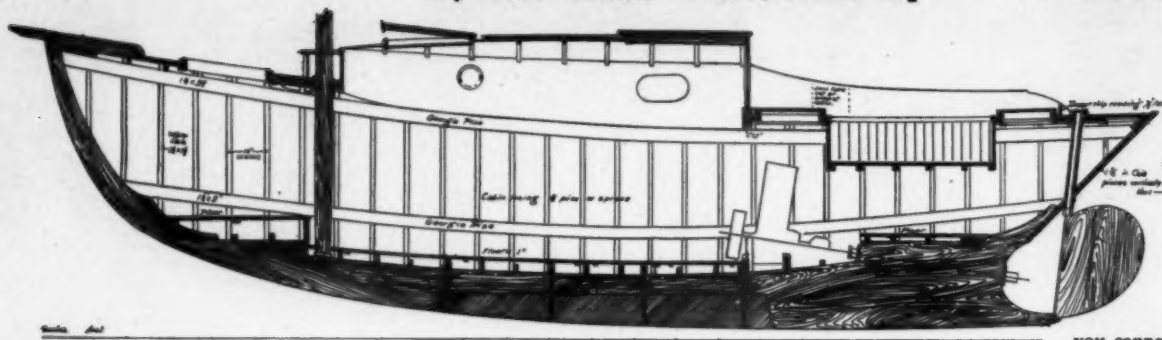
Fresh water is carried in a portable five-gallon can, as we feel that it is fresher that way than when tanked. We also find this a convenient quantity to handle. The can is fitted with a faucet and has a regular abiding place in the cabin from which it is slipped easily through the forward hatch for refilling. Salt water is tapped directly in to the cabin from outside. There is a collapsible table that fits either the cabin or the cockpit. This table folds up when not in use and slides into the space above the ice-box. A drop front in one of the seat lockers is so situ-

Table of Offsets

Lines are to the Outside of Planking & from Base Line which is 3' below L.W.L.

Dimensions are in Feet, Inches and Eighths

Stations	0	2	3	8	11	14	17	20	23	26.6
Sheerline	7-1-2	6-9-0	6-2-0	5-9-6	5-6-0	5-4-0	5-2-4	5-2-4	5-3-2	5-5-0
Rabbit		3-1-2	2-0-4	1-8-0	1-6-0	1-3-6	1-6-4	1-10-0	1-11-6	
Keel Bottom		2-9-1	1-5-4	9-6	5-6	4-0	3-0	3-0	4-0	
Sheer Line		1-2-0	2-6-6	3-6-0	3-11-2	4-0-0	3-10-0	3-3-0	2-5-2	1-3-4
Water Line C		1-0-0	2-6-2	3-6-0						
" B		10-0	2-4-0	3-4-3	3-10-2	4-0-0	3-10-0	3-3-0	2-3-6	
" A		7-0	2-0-0	3-1-6	3-9-1	4-0-0	3-10-0	3-3-0	2-4-4	
LWL			1-7-6	2-8-0	3-5-0	3-9-0	3-5-4	2-7-4	1-1-0	
2 nd Water Line			11-6	2-1-0	2-11-3	3-4-0	2-10-6	1-10-0		
1 st				1-2-0	2-0-0	2-4-4	1-10-0	8-0		
Diagonal A			11-4	1-5-4	1-9-0	1-9-4	1-7-2	1-2-6	7-0	
" B		7-0	1-10-6	2-9-4	3-4-2	3-7-0	3-3-4	2-8-0	9-0	
" C		9-4	2-3-0	3-5-4	3-11-0	4-1-7	3-11-4	3-4-4	2-6-6	
Diagonal A intersects perpendicular 3'0" above Base Line and Base Line 3'0" out.										
" B				4'0"				1 st W.L. 4'0"		
" C				3'0"				L.W.L. 6'0"		



Constructional plans of White Cap, reproduced to the scale of $\frac{1}{4}$ inch to 1 foot. The keel is in one piece and is weighted with 1,250 pounds of iron

ated as to clear the cabin steps, yet it is near enough to the engine to be reached immediately for emergency tools and other paraphernalia such as is used to start an engine and keep it running.

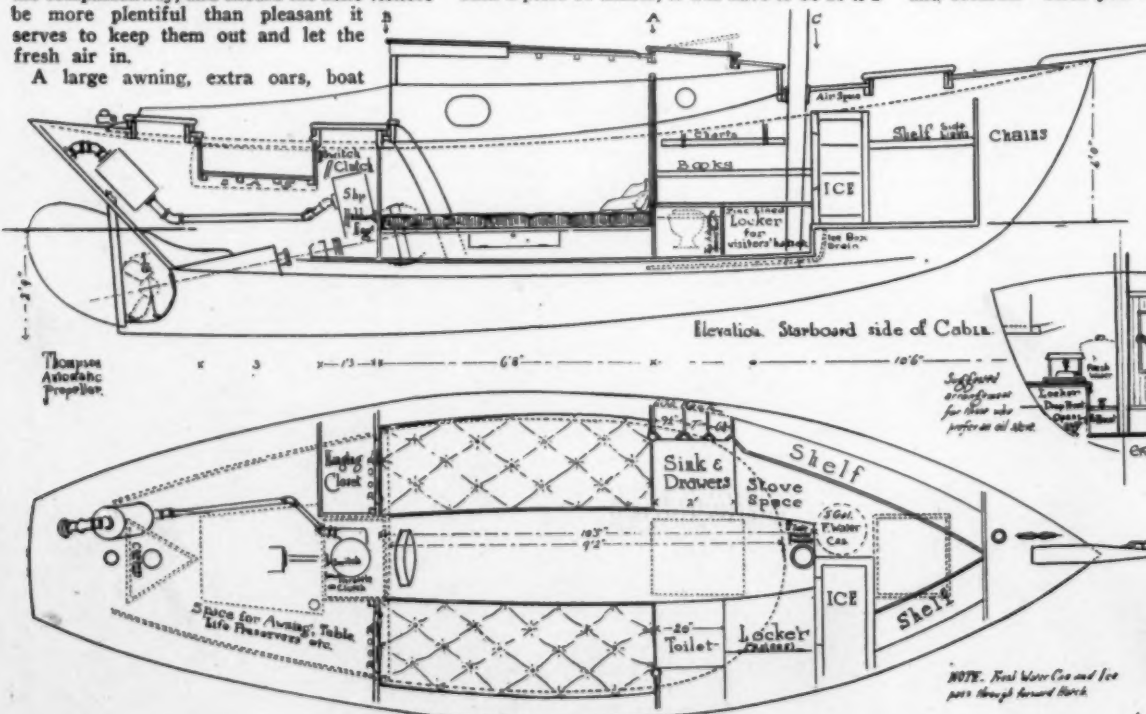
As for the toilet, that is arranged in such a way as to be out of sight without monopolizing a special room. You can see best how the space is arranged by referring to the plans. In construction, the top front is hinged and drops down when the cover is raised. Two dowels fixed in the top of the front fit into two corresponding holes in the cover when the compartment is closed.

In addition to the mosquito frames for the air scoop hatch atop the cabin, a net slips over the companionway, and should the little visitors be more plentiful than pleasant it serves to keep them out and let the fresh air in.

A large awning, extra oars, boat

hook and sails find ample storage space beneath the after deck on the starboard side; while on the port side there is a hanging locker reaching all the way from under the bridge deck down to the bottom of the boat.

The general construction and dimensions may easily be got from the plans; there is nothing very intricate about them, and they are much the same as for any other boat. In some few particulars the hull may differ, and those we may proceed to take up now. The keel, for instance, is cut from one fine piece of white oak and runs in an unbroken timber from where it leaves the stem to where the stern is securely fastened to it with a four-inch knee. If you are lucky enough to get such a piece of timber, it will have to be 21 x 2



Inboard profile and arrangement plan, reproduced to the same scale. White Cap's beam is 7 feet 10 inches and her draft 2 feet 9 inches

feet 2 inches wide and must be trimmed from a thickness of 7 inches down the center to 4 inches along the foot. However, don't be disheartened if

you cannot get a log of this size; just go ahead and piece your keel and deadwoods as for any other boat.

Four $\frac{3}{4}$ -inch jam-headed bolts, the nuts of which should be screwed down over washers, support the iron keel. The weight of the keel specified, 1,250 pounds, will be all the boat requires, making her practically non-capable with the sail spread given. If

you cut out the section of the keel as marked, indicating carefully where the holes have to be for the bolts and their exact size and shape, you can supply it to the foundry for them to cast from.

Along each side of the cabin house you will note that an ash plank has been laid beneath the regular decking. This saves fitting numerous deck beams, simplifies the building and helps strengthen the boat. The bridge deck construction, which, we all know, adds still more strength to the boat, offers an opportunity for using several substantial timbers the full width of the craft just where they are of special value.

Except for the plank sheers the deck may be laid fore and aft of 1-inch yellow pine. Use planks about 2 inches wide, well payed with Jeffery's marine glue or white lead. Great care must be taken not to get the deck canvas wet at any time before it is finally stretched and secured. Then you may go over it with

a wet sponge and it will take up and become as tight as a drum. Of course, you must be sure that the edges of the canvas are very thoroughly tacked before shrinking, or it

will draw and you never will get it just right again.

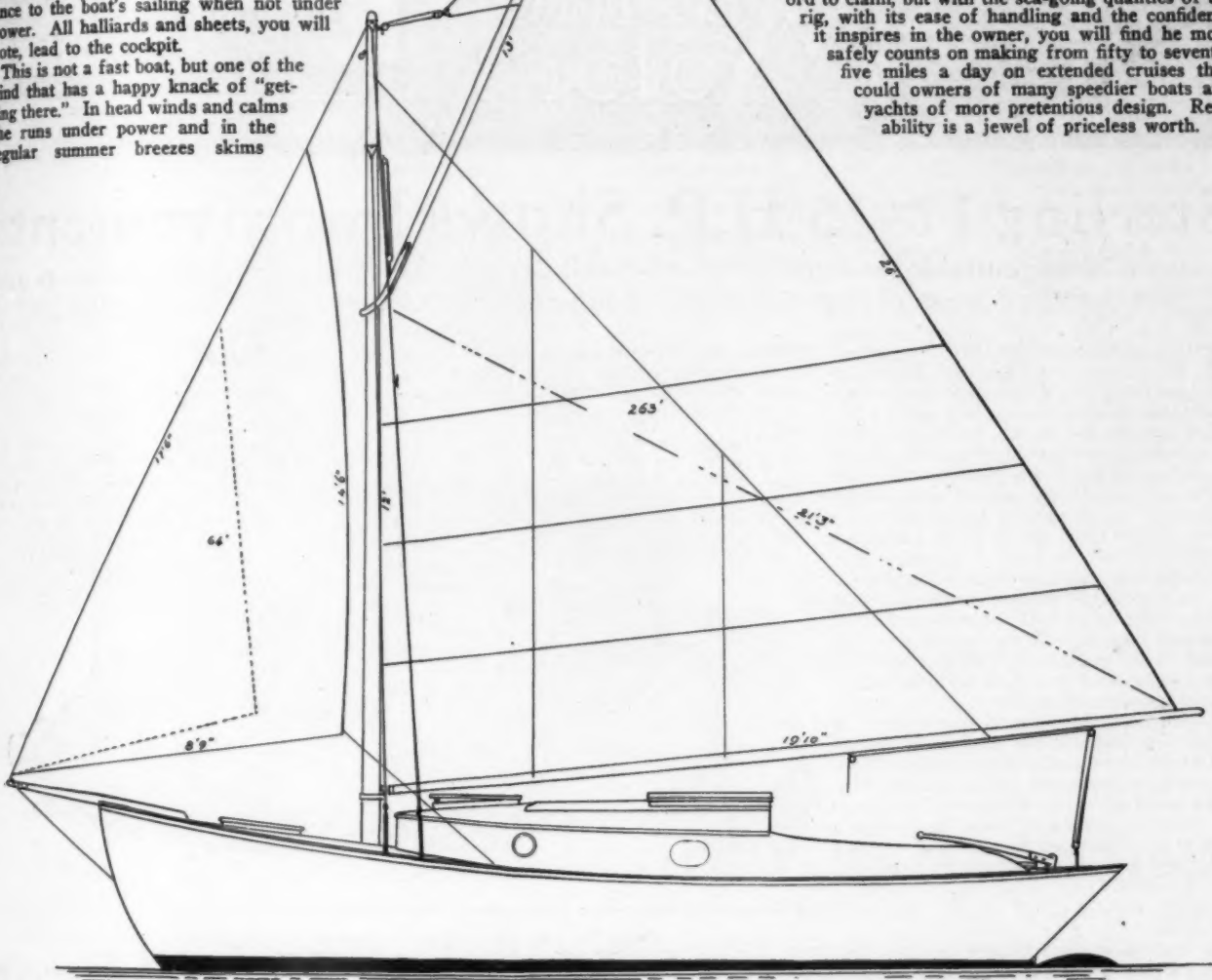
The gasoline supply is carried in two tanks, each having a capacity of twenty gallons. They are situated up under the deck, one each side of the cockpit, and should

be installed with the engine, before the deck is laid.

The power controls, consisting of switch, carburetor control and a one-way clutch, are right in front of the helmsman, just inside the hatch on the bridge deck. The boat is fitted with a Thompson feathering propeller, the blades of which swing fore and aft like a fish tail and offer a minimum of resistance to the boat's sailing when not under power. All halliards and sheets, you will note, lead to the cockpit.

This is not a fast boat, but one of the kind that has a happy knack of "getting there." In head winds and calms she runs under power and in the regular summer breezes skims

along under a comfortable sailing rig that offers a welcome change from the engine. Nowadays, too, when the price of gasoline is soaring, the sails form an economic asset in maintenance that is worth considering. When this little ship makes about 6½ miles with her 5 h.p. Hubbard engine or 7 or 8 miles with a stunning breeze, we count that she is going some. No sir, it is not a high record to claim, but with the sea-going qualities of the rig, with its ease of handling and the confidence it inspires in the owner, you will find he more safely counts on making from fifty to seventy-five miles a day on extended cruises than could owners of many speedier boats and yachts of more pretentious design. Reliability is a jewel of priceless worth.



Sail plan of the sloop-rigged auxiliary cruiser White Cap. All halliards and sheets are led to the cockpit

CONDITIONS FOR "MY IDEAL CRUISER" DESIGNS

THE "Ideal Cruisers" described from month to month in MoToR Boating are only those which have been designed by amateurs—boatmen who know from actual experience what they are talking about. If you are an amateur who has ideas on the subject we should like to publish the plans and descriptions of your ideal cruiser.

For each design which we publish we shall pay \$50. In addition to this, we shall give a prize of \$100 worth of equipment of his own selection to the amateur designer whose cruiser is voted by the body of MoToR Boating's readers to be the nearest to their conception of an ideal

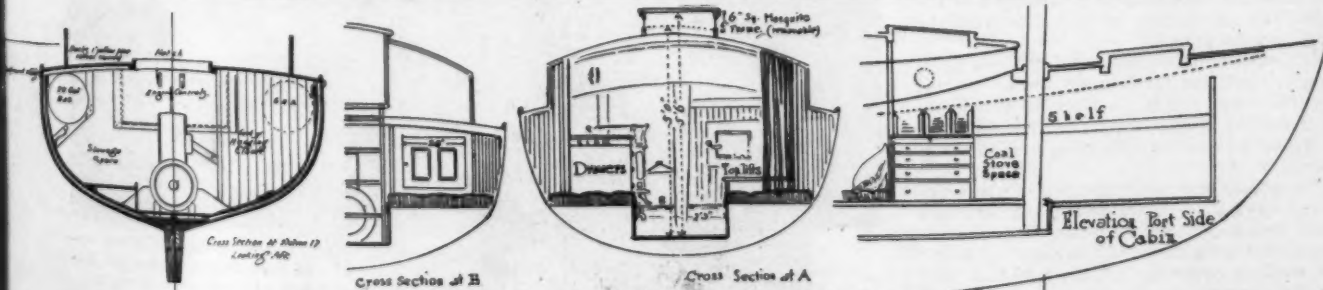
cruiser. A poll will be taken after the publication of the last of the series and every subscriber for MoToR Boating will be given opportunity to register his preference.

Six or more designs of different cruisers will be published in successive issues, and each design must be complete in every particular, so that the amateur who knows anything at all about boat building will be able to construct his own craft from the published particulars. The plans must include an outboard profile, as well as interior arrangement plans,

construction plans, full set of lines, table of offsets, and constructional details—in fact, all data necessary for the construction of the cruiser. The descriptions should be general in trend, and should set forth the designer's reasons for considering his cruiser the ideal one.

As construction methods are more or less alike, irrespective of design, contributors to the series should not touch on this phase of the subject in the description of their ideal cruiser.

Designs and descriptions of "My Ideal Cruiser" may be submitted any time up to May 1, 1917. Descriptions should not exceed 2,500 words in length.—Editor.



Cross section showing interesting details of her design and construction

American Marine Motors



Sterling 17-25 H.P. Shows Improvements

Enclosed Motor Suitable for Runabouts and Small Cruisers Has Easily Adjustable Bearings and Lubricating System of High Efficiency—Equipped with Reverse Gear of Sterling Design

THE Sterling Engine Co., of Buffalo, N. Y., now has ready for delivery an entirely enclosed motor suitable for runabouts and small cruisers which can be furnished with electric starter, rear hand starter, or without any such equipment. This engine has a bore of $3\frac{3}{4}$ inches by a stroke of $5\frac{1}{2}$ inches and weighs 600 pounds with regular equipment. Its rating is 17 h.p. at 600 r.p.m.; 25 h.p. at 1,000 r.p.m., and 30 h.p. at 1,200 r.p.m.

The crankshaft is carried in the upper base, and even after years of service the bearings can be quickly taken up by simply removing a few screws which hold the upper and lower base and hinging back the engine, thus exposing all working parts. With this construction it is declared that there is no danger of cramping or straining parts.

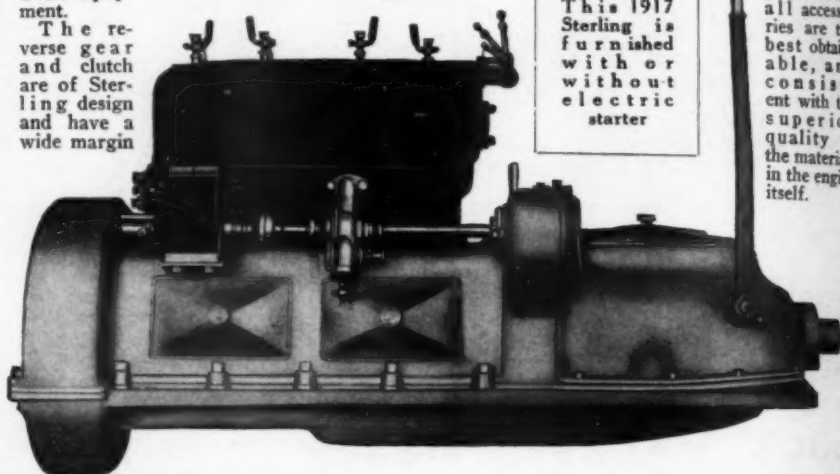
A pressure feed oiling system is used, in order to provide efficient lubrication, regardless of the riding angle of the engine. There is a sump pit in the rear end of the lower base and a powerful oil circulating pump draws the oil from the sump and forces it through a filter to the distributing tube, whence it is carried under pressure to all main bearings, connecting rod bearings and the reverse gear.

A pressure gauge, which gives a constant check on the oiling system, is furnished with the regular equipment.

The reverse gear and clutch are of Sterling design and have a wide margin

of safety. It is stated that the ignition system, carbureter, propeller and all accessories are the best obtainable, and consistent with the superior quality of the materials in the engine itself.

This 1917 Sterling is furnished with or without electric starter



Scripps Greyhound a Valve-in-Head Motor

New Six-Cylinder Machine Built in Two Types for High Speed and Medium Duty—Completely Enclosed Engine for Express Cruisers Which Develops 125 H. P. at 1,300 R. P. M.

FOR some months prior to the opening of the recent New York motor boat show rumors had been going around that the Scripps Motor Co., of Detroit, Mich., was preparing an entirely new offering, and so it was natural that interest at the Scripps booth should center in the Greyhound model which was then shown for the first time. This new machine, shown in the accompanying illustration, is a high-speed job developing 125 h.p. at 1,300 revolutions per minute. There are six cylinders, cast in blocks of two, and having interior specifications of 5-inch bore by 7-inch stroke. The valves are in the head and they, as well as all other moving parts, are completely enclosed. It is a feature of this machine that the flywheel is arranged at the after end where it is interposed between the load and the power.

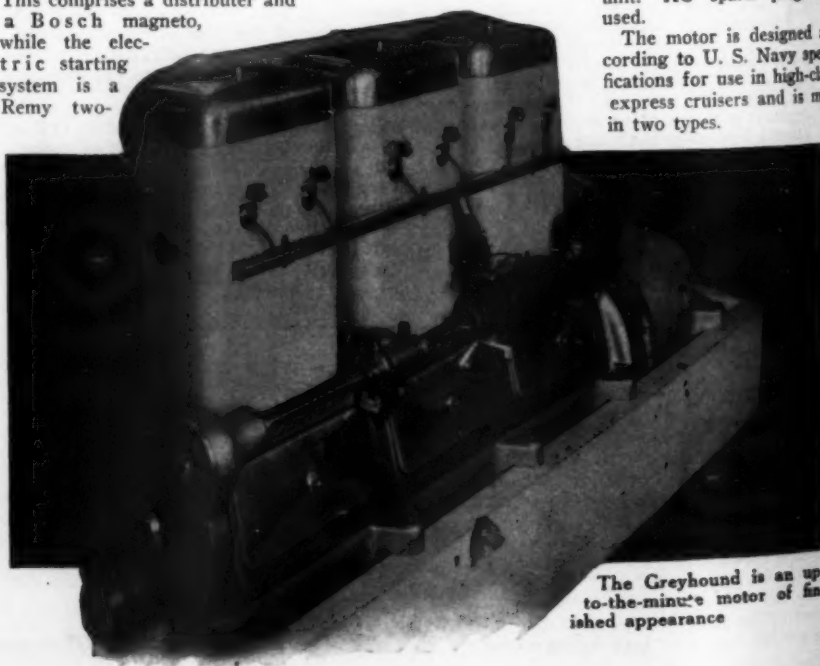
A four-bearing crankshaft of $2\frac{3}{4}$ -inch diameter is used, and the bearings are of unusual length to give the kind of service that is required. The inlet valves are of $2\frac{3}{4}$ -inch diameter, and the exhaust valves measure $2\frac{1}{4}$ inches across.

In general the motor presents a clean, finished appearance, the intake and exhaust manifolds being arranged in one casting and the equipment being compactly disposed. A length of shafting operating off the half-time gear at the forward end of the motor drives the rotary water pump and the ignition apparatus.

This comprises a distributor and a Bosch magneto, while the electric starting system is a Remy two-

unit. AC spark plugs are used.

The motor is designed according to U. S. Navy specifications for use in high-class express cruisers and is made in two types.



The Greyhound is an up-to-the-minute motor of finished appearance

The Gray-Prior Four-Cycle Model D-4

New Four-Cylinder Machine Which Is Notable for Its Unusual Length of Stroke—A 36 H. P. Outfit Which Combines Medium Weight with Unusual Strength—Accessibility a Feature

THE Gray & Prior Machine Co., of Hartford, Conn., for many years manufacturer of the well-known Hartford two-cycle motor, has now entered the four-cycle field with the four-cylinder motor shown in the accompanying illustration. This motor, which develops 36 h.p., is chiefly remarkable for the length of its stroke, this being 8 inches to a cylinder bore of 4½ inches, but there are many other features which give it distinction. The D-4, as it is

operation, the enormous strength and high factor of safety of all its parts, and the liberal use of heavily case-hardened and heat-treated alloyed steel parts.

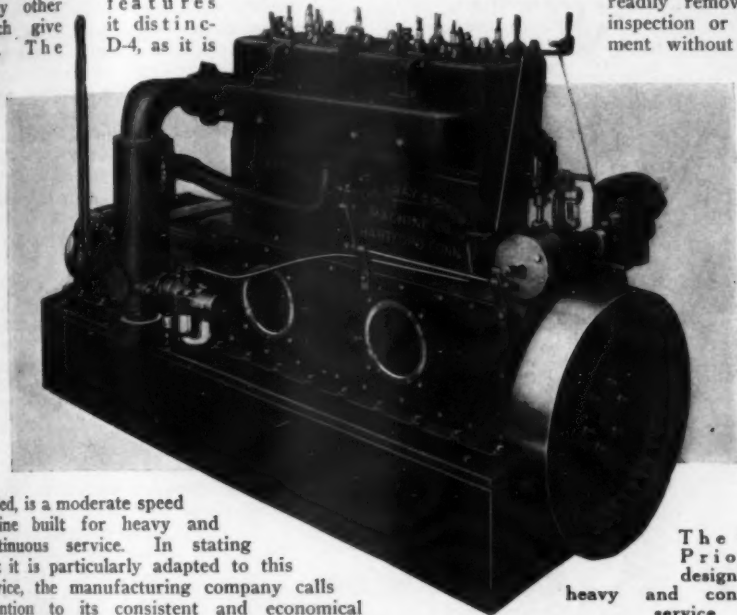
In general design the motor combines reasonable lightness with great strength, unusually large bearing surfaces and few parts. Accessibility has been the foremost consideration in its design, and every moving part may be readily removed for inspection or adjustment without taking

the whole motor to pieces. The crankcase, for instance, is constructed in two separate castings, the upper half having large plates on each side to make it easy to reach the various parts without removing the cylinders from the base. The center line of the crankshaft is arranged above the top of the base, thus making the main and the crankpin bearings easily accessible for adjustment. The flywheel is held in place with six steel studs that extend through its hub into a disc which is an integral part of the crankshaft. This method of fastening is declared to render the flywheel readily removable while proof against its working loose in service. The cylinders are of the L type and are cast in pairs with detachable heads. This method of construction not only presents a neat appearance, but simplifies the removal of the pistons and connecting rods for cleaning or adjustment.

The valves are placed on the port side and all valve chambers and passages are thoroughly water-jacketed and enclosed. The valves of 2¼-inch diameter and are constructed with cast iron heads electrically welded to steel stems. Adjustments for clearance are easily effected by means of screw and lock nut in the push rod.

Other interesting features include machined steel case-hardened gears, force-feed lubrication, two independent ignition systems, double pump equipment, air compressor, governor, water-jacketed manifold, etc.

The camshaft and cams are made from high-grade steel. The cams are a driving fit on the shaft and are held in place by means of Woodruff keys and taper pins. The shaft, cams, and bearings are housed in a tubular-shaped casting and are flooded in a bath of oil.



The Gray-Prior D-4, designed for heavy and continuous service

called, is a moderate speed engine built for heavy and continuous service. In stating that it is particularly adapted to this service, the manufacturing company calls attention to its consistent and economical

Lacy V-Eight Made in 100 & 200 H.P. Sizes

New Eight-Cylinder Unit Power Plant to Meet Demand for Machine of High Efficiency, Light Weight, and Compact Design—Adapted to Modern Runabout and Express Cruiser Service

THE Lacy Marine Motor Co., of Rochester, N. Y., introduced at the New York motor boat show a V type marine motor which is declared to meet the demand for a machine of high efficiency, light weight, and compact design. It is stated that while the inherent characteristics of this motor lend themselves particularly to the requirements of modern run-

portion to the size of the cylinder than they can be made in a motor of the vertical fore and aft type.

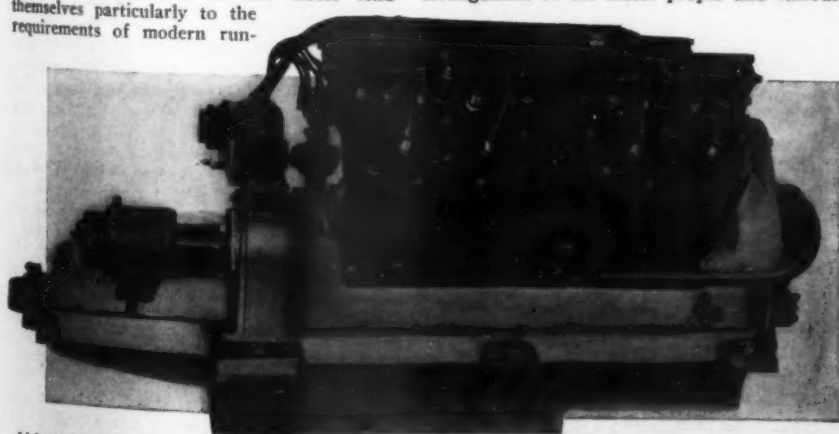
The Lacy V-Eight is being made in 100 and 200 h.p. sizes, the respective cylinder dimensions being 4¼ x 6 and 5¼ x 6½ inches. The arrangement of the motor proper and various

aluminum casting which includes the flywheel housing and which carries the main bearings. The base is also an aluminum casting into which structural stiffness has been incorporated to the fullest extent. I-beam section connecting rods are used and the pistons are cast from a special grade of iron which gives great strength while reducing weight to a minimum.

A full pressure system of lubrication is employed which operates as follows: A gear pump receives the oil through a strainer and delivers it to a manifold from which individual leads carry it to every bearing in the motor. Each main bearing is provided with two oil leads so that the lubricant is delivered both at the top and at the bottom. Drilled oil ducts also supply the camshaft bearings from the main pressure system. From the crankshaft bearings the oil is carried through drilled passages to the crankpins, after which it returns to the oil pit where it is cooled by means of a liberal water jacket. The pressure is regulated by means of a convenient valve and is indicated at all times by a gauge; another gauge indicates the amount of oil in the chamber.

A double system of ignition is provided by means of a battery igniter of the latest type and a high tension magneto. The systems are entirely independent, there being two sets of spark plugs, and they may be operated alone or together.

Water for cooling the cylinders, as well as the oil chamber jacket, is supplied by means of a double gear pump. This pump is driven from the end of the camshaft by means of a flexible coupling.



Although all moving parts are completely enclosed, the Lacy eight-cylinder motor possesses unusual accessibility

about and express cruiser service, the engine is unsurpassed as a general purpose marine power plant. One of the features to which attention is called by the manufacturers is the reduction of pressure per square inch upon the main bearings, the reason for this reduction being that the bearings adjacent to a cylinder under fire are much longer in pro-

cessories is such that accessibility is obtained to a high degree. Although all the working parts are completely enclosed, this enclosure does not interfere with quick access to any of them.

The cylinders are of L-head design cast four in bloc of hard close-grained iron, and they have detachable heads. The crankcase is an

Swinging the Boat for Deviation

Method of Determining the Compass Error without Putting the Boat Over a Number of Courses—Accuracy and Thoroughness Attained with the Simplest of Home-Made Instruments

By F. T. Lander

ON the majority of small motor boats the compass is given too little attention. Indeed, on some boats no compass is found at all, while on others it reposes in some out of the way place to be brought forth at infrequent intervals occasioned perhaps by suddenly running into fog, and at such times when needed most it is apt to be regarded with a feeling of uncertainty and doubt.

If, on the other hand, the compass is constantly brought into play the owner will soon realize how much pleasure he has missed through its disuse, for as time goes on the fascination grows to a point where the sport of boating takes on an added charm. But the best compass made will lead you astray unless the tricks played upon it by the surrounding iron and steel have been discovered and mastered.

The proper means of correcting this deviation is more or less a matter of choice, but the one practised most frequently seems to be that of putting the boat over known courses and ascertaining the error. The advantage here lies in the fact that no instrument is required, but the disadvantages are many.

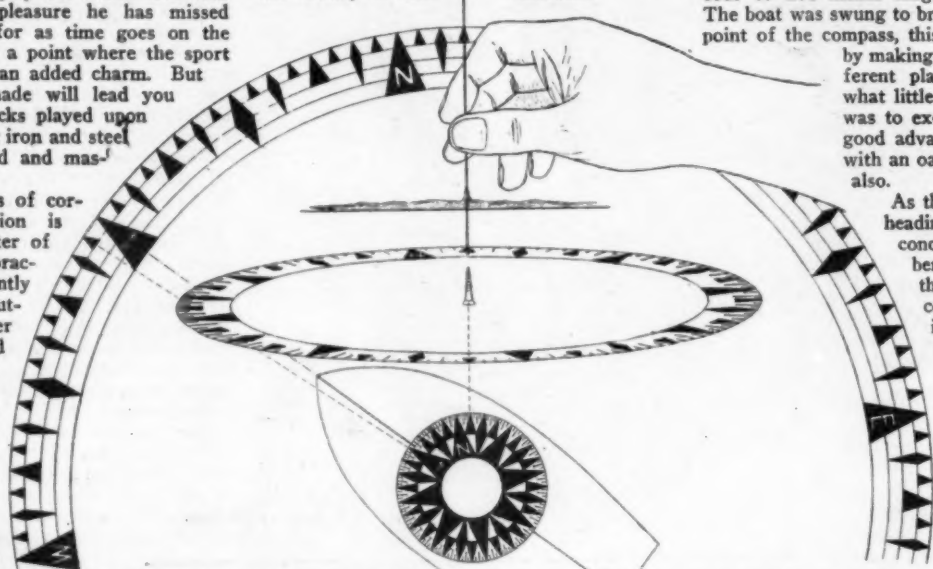
To put your boat over the required number consumes time—in fact, days, perhaps—and right here comes up the question as to what really is the required number. Some say eight will give fair results, but a deviation card made from that number will be a poor affair at best, for very likely some of the angles will be greater than four points distant from the next. Even with sixteen bearings or, in fact, one for every point of the compass, the results would not be as they should, for on the majority of boats the compass is over the centerline of the keel, where also is a signal mast, skylight, ventilator or other gear which interferes with taking an accurate sight. Under these conditions it becomes impossible, due to the obstructions ahead, to determine the exact point when you are "on" the bearing—so it resolves itself into a matter of estimation.

It would therefore seem, in view of these circumstances, that some other method of determining the deviation would give the desired result not only with more accuracy but with less expenditure of time and labor. To accomplish this end is a matter of extreme simplicity, yet due to an apparent feeling of doubt as to the ultimate result, or the notion that it is necessary to provide oneself with expensive instruments, the process of swinging ship is seldom resorted to.

Put these mistaken ideas aside and start right in to swing your boat. Not only will the result be infinitely superior to that of the other method referred to, but the whole job, including the preparation of the deviation card, may be completed in short order. As to the instruments, you no doubt have these aboard your boat already. If your junk box does not contain a very small brass screw and a piece of fine brass or copper wire, then for the sum of ten cents a set of "instruments" may be purchased that will do the trick with a degree of accuracy fully equal to that of the most

expensive pelorus or azimuth attachment.

An example of the ease with which one may detect the errors of his compass is indicated by the fact that the writer swung a 30-foot boat, taking twenty-nine out of thirty-two sights, and had the whole thing done within an hour, including not only the making of a deviation card, but the plotting of a curve to serve as a check. Furthermore, the job was done single handed, there being no one in the vicinity to lend assistance.



Method of taking a bearing by means of a brass outside semicircle. The diagram merely shows (shown with a strip of shore line immediately astern from the boat's position). The inner (elliptical) card with the lighthouse bearing N by E when the boat is on the bearing. The correct magnetic course is, therefore, NW $\frac{1}{4}$ N (shown by the dotted line to this point on the semicircle).

screw and a piece of wire. The as an indication that the light-beneath the hand) bears N $\frac{1}{4}$ E magnetic heading NW, thereby revealing a deviation of $\frac{1}{4}$ point westerly.

ried ashore and a bearing taken from a point in line with the boat and light. After checking this reading from the chart to make certain that there was no disturbance due to local attraction, the compass was set up in its customary place aboard the boat.

Next a small brass screw was placed on the glass directly over the center of the card. Then a piece of fine copper wire was stretched in order to straighten it and a section some four or five inches long was cut therefrom. The boat was swung to bring her head on each point of the compass, this being accomplished by making the cable fast at different places so as to allow what little tide and wind there was to exert their influence to good advantage. A few kicks with an oar helped out at times also.

As the boat approached a heading, attention was concentrated on the lubberline, and the instant the latter reached the compass point a bearing was taken of the lighthouse. This was done by first holding the wire in a vertical position on the side of the compass nearest the light and allowing the lower end to rest on the glass directly over the edge of the card. Then by shifting the wire so as to cut the light when sighting over the screw, a reading could be

taken by glancing down at the compass card. After a few trials the whole operation of taking the heading, sighting the object, and reading the bearing may be done within a second. Before commencing to swing ship a few preparations were made in order to facilitate matters during the progress of the work. These consisted merely of entering the points of the compass vertically on the left side of a sheet of paper. The word "heading" was written over this column and immediately to the right provision was made for a new column entitled "bearing." It had already been ascertained that Great Captain Light bore N $\frac{3}{4}$ E magnetic and a note to this effect was made.

A glance at the lubberline showed the boat to be heading NW by compass and a sight was instantly taken of the light which was found to bear N by E, thus showing a westerly deviation of $\frac{1}{4}$ point. A notation of this first bearing was made opposite the proper heading and successive bearings were then taken for each new heading until a total of twenty-nine were obtained. The remaining three slipped by too quickly to record, but the omission was considered of negligible importance. No attempt was made to take a bearing closer than the nearest quarter point, but it is possible to take readings in degrees without any difficulty.

Next the amount of deviation on each course was entered in a new column and then a series of vertical lines was drawn on which to plot a curve. The center line was intended to represent true magnetic or no error, while those on either side were easterly or westerly deviation in quarter points. The curve was fair throughout, thus proving the accuracy of the readings, but should mistakes have been made in recording a bearing, etc., these would have become apparent through this medium.

Heading	Bearing	Deviation	Compass Course
North	N $\frac{1}{4}$ E	$\frac{1}{4}$ W	N $\frac{1}{4}$ E
N by E	-	-	N by E
NNE	-	-	NNE
N $\frac{1}{2}$ E	-	-	N $\frac{1}{2}$ E
NE	-	-	NE
N $\frac{1}{2}$ NE	-	-	N $\frac{1}{2}$ NE
ENE	N $\frac{1}{4}$ E	$\frac{1}{4}$ W	ENE
E $\frac{1}{4}$ N	-	-	E $\frac{1}{4}$ N
East	-	-	E
E $\frac{1}{4}$ S	-	-	E $\frac{1}{4}$ S
ESE	N $\frac{1}{4}$ E	0	ESE
S $\frac{1}{4}$ E	N $\frac{1}{4}$ E	$\frac{1}{4}$ E	S $\frac{1}{4}$ E
S $\frac{1}{2}$ E	-	-	S $\frac{1}{2}$ E
SSE	N $\frac{1}{4}$ E	$\frac{1}{4}$ E	SSE
S $\frac{1}{4}$ E	North	$\frac{1}{4}$ E	S $\frac{1}{4}$ E
South	N $\frac{1}{4}$ E	$\frac{1}{4}$ E	S
S $\frac{1}{4}$ W	-	-	S $\frac{1}{4}$ W
SSW	-	-	SSW
S $\frac{1}{2}$ W	-	-	S $\frac{1}{2}$ W
SW $\frac{1}{4}$ S	N $\frac{1}{4}$ E	$\frac{1}{4}$ E	SW $\frac{1}{4}$ S
SW	-	-	SW
SW $\frac{1}{4}$ W	-	-	SW $\frac{1}{4}$ W
WSW	-	-	WSW
W $\frac{1}{4}$ S	N $\frac{1}{4}$ E	$\frac{1}{4}$ E	W $\frac{1}{4}$ S
West	N $\frac{1}{4}$ E	0	West
W $\frac{1}{4}$ N	-	0	W $\frac{1}{4}$ N
WNW	-	0	WNW
NW $\frac{1}{4}$ W	N $\frac{1}{4}$ E	$\frac{1}{4}$ W	NW $\frac{1}{4}$ W
NW	-	-	NW
NW $\frac{1}{4}$ N	-	-	NW $\frac{1}{4}$ N
NNW	N $\frac{1}{4}$ E	$\frac{1}{4}$ W	NNW
N by W	-	-	N by W

Deviation card prepared in an hour's time by the writer by swinging the boat. The final column indicates the several compass courses necessary to steer in order to sail the proper magnetic course.

The boat was anchored inside and about 400 yards east of Matinecock Point, Long Island Sound, and bearings were taken of Great Captain Island Light, a distance of about five miles. There was little or no wind and the tide was barely noticeable. The compass was car-

All the Kinks of Grinding a Motor's Valves

By E. J. Stone

Helpful Hints Which Take the Dread Out of an Important Operation

WHILE the average motor boat owner appreciates to the highest degree the steady and even pulsation of a fine-running motor, he is likely to be a trifle worried when this same motor shows by its uneven running that there is something the matter, and he is still more concerned if by the process of elimination he finds that the valves must be ground to restore the original smoothness.

There is, however, no foundation for this dread, as by careful and systematic methods of procedure the work can be done with such ease that to most of us it is more of a pleasure than a hardship.

The first operation is, of course, to remove the caps in the cylinder heads that are located directly over the valves and then the valve springs must be removed after the withdrawal of the valve stem key that holds in the spring retaining cap. By the use of the special chain type of valve lifter, as shown in Fig. 1, you are enabled to get around any pipes or manifolds that otherwise interfere with ready access to the valve keys.

Upon removing the valves, springs, and caps the valves should be tried in the guides to ascertain whether there is any side motion to the stems. If you find there is considerable lost motion there, you would better order new guides or stems (depending on which are worn) or possibly both, as the air sucked in when running will spoil the adjustment of your mixture with the result that proper operation when throttled down will be impossible.

The test for wear in the guides being passed, take a machinist's center punch and number each valve. Then clean the valve and its seat and test for warpage in the following manner: With a medium hard lead-pencil, draw ten or twelve lines on the valve seat and the valve, as shown in Fig. 2; then insert the valve in the guide and with a screwdriver rotate the valve a few times on its seat, using a fair amount of pressure on the screwdriver. Remove the valve and if you find that the pencil marks have been removed from both the valve and the seat, the valve is in good condition and ready to grind. If, however, you find the marks are removed entirely from the seat but not from the valve, the valve is warped and should be sent to a machine shop to be trued up before grinding.

Before starting to use the grinding compound, there are two more things to be looked after. First, see that the seats of the valves are not hammered down, as illustrated in Fig. 3. If such is the case, this ridge should be removed in a machine shop, so as not to restrict the port area when the valve is open.

If the seat of the valve is pitted, you will save time if you can borrow a reseating tool that is adapted to your motor. If you are fortunate enough to obtain one of these tools, care should be taken not to remove any more of the metal from the seat than is absolutely necessary.

Now take some waste or rags and pack tightly in the cylinder around the valve guide, so as to prevent any of the grinding compound from getting into the cylinder. You are then ready to start on the grinding itself.

If the valves are in bad shape, start with a medium grade of compound, while if they are not badly pitted, a fine grade should be used. In all cases a fine grade should be used to

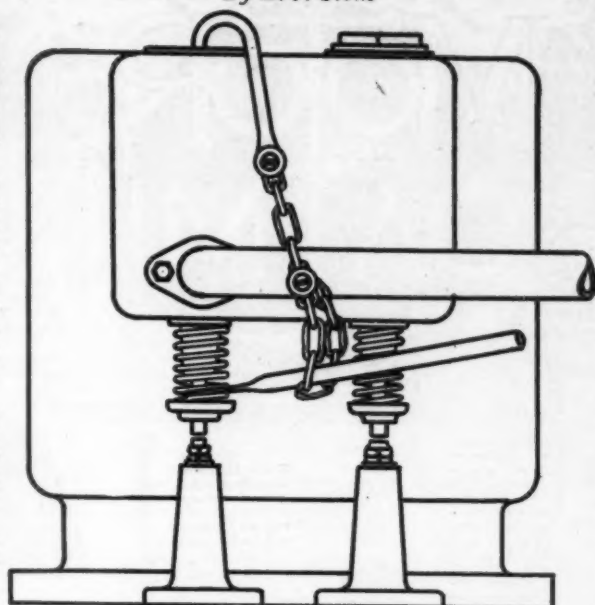


FIG. 1



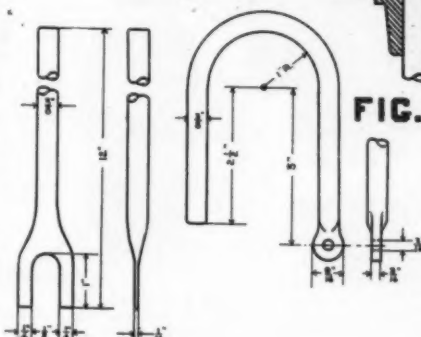
FIG. 2



FIG. 3



FIG. 4



WOOD BLOCK 3" IN DIAM

FILE GROOVE AROUND TOP OF BRACE AND DRIVE WIRE NAIL THROUGH BLOCK TO REGISTER WITH GROOVE

FIG. 5

Sketches which make clear the different steps of valve grinding

Further Enlightenment on a Question in Last Month's Prize Contest

finish with. The compound should be mixed with machine oil to the consistency of a thin paste and it might be in order to state here that carborundum will cut cleaner and faster than most of the other compounds and has not the tendency that emery has to imbed itself in the cast iron.

Spread a little of the grinding paste on the valve with the finger, slip a light spring over the valve stem (see Fig. 4), and drop the valve into place. This spring should be long enough to keep the valve about a quarter of an inch from its seat. By the use of this spring it will not be necessary to slip the finger under the valve stem to raise it from the seat while grinding, as the slacking of the pressure on the valve head will allow the valve to raise itself.

Opinions differ as to the best tool for rotating the valve, some preferring the ordinary screwdriver and some the brace type, as shown in Fig. 5. This latter the writer has found to give a little more speed and comfort and he has, therefore, given dimensions for those who wish to make up one for themselves.

In grinding, the valve should be rotated on its seat back and forth through an arc of about 90 degrees for ten or twelve times; then the pressure should be slackened, allowing the valve to lift, the valve turned to a new location, and the process repeated. Do not revolve the valve continuously in one direction, as you will ring the seat and have to do the job all over again.

After the metal shows a fresh, bright surface on both the valve and the valve seat, test with a pencil in the same manner as in the beginning. If all the marks are removed, pour a little gasoline over the head of the valve; if there is no leakage, this valve is finished.

Carefully remove the waste previously inserted and take care to wipe all the compound out of the valve chamber, as a small particle of this in the cylinder will do a vast amount of damage.

It will help the quick seating home of the valve if, after the grinding is completed and the compound wiped off, the valve is oiled on its seat and the grinding motion repeated a few times, using the oil only.

If your motor has removable valve cages, or is of the separable valve-in-the-head type, take the parts over to the bench and proceed in the same manner as above.

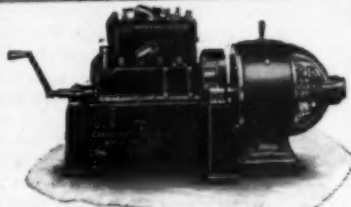
Although with most motors the valve springs may be replaced and the locking pins slipped through the ends of the stems by simply bearing up on the springs with the chain-lever tool, extra heavy springs or inaccessible locations may make it necessary to adopt other methods. The easiest of these is to contract the spring in a bench vise—bracing it to prevent its springing out of the jaws—and while it is so contracted secure it with three pieces of fine wire equally disposed around it. When the spring is then put in place the wire may be cut.

If the work has been carefully carried through, you will be more than repaid for the time expended in the improved running of your motor, and your summer trips will be continuous rounds of pleasure.

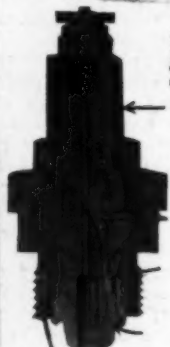
New Things For Motor Boatmen

[Each month many new parts, attachments and fittings, interesting and invaluable to owners of large and small motor boats, are added to the devices already on the market. Announcements of these articles come to us in such numbers that in order to introduce all of them to our readers we have been obliged to omit descriptions and publish only illustrations with short explanatory captions. In doing this, however, we urgent-

ly invite our readers to write us for complete information, as we shall take the greatest pleasure in providing it, together with the manufacturers' names and addresses. Do not hesitate to ask us, as we have made special arrangements to take care of this branch of our correspondence and are able to give you accurate information with the greatest promptness.—Editor.]



Gasoline-electric generating set made in 4 and 5 h. w. capacities, and having sufficient power to operate 8,000 and 10,000 c. p. searchlights respectively



Left: A new spark plug declared to be absolutely indestructible



Attractive bulkhead type steerer which is made in two sizes



The Jumbo Molite—a plug designed to eliminate ignition problems



Combination coupling and one-way clutch for small boats which sells for \$5



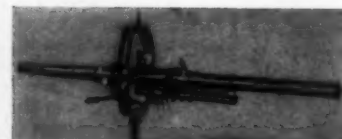
A detachable helmsman's seat with tubular standard and padded seat board. The cost is \$2.50



Right: Spark plug cleaner consisting of a glass tube which, half filled with gasoline and needles, screws over the plug end. When the whole is vigorously shaken the needles pick away the carbon



The Red Head Big Boy heavy-duty plug which is now made with a Vitri- stone insulator



An interesting non-recoil 3-inch gun for installation on patrol vessels



The Sparton vacuum fuel system retails at \$10

An indicator to show the angle at which an airplane is flying

Above: A new \$1 plug which is declared to be trouble-proof

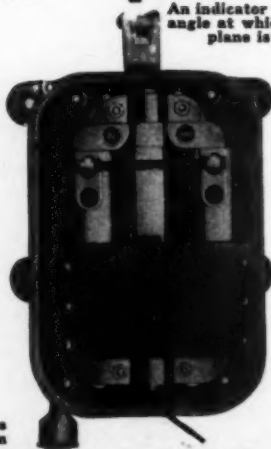
An easily installed all metal adjustable shaft log



Lines of a new 14-foot outboard motor boat declared to be practically non-capsizeable. It is sold in K-D form



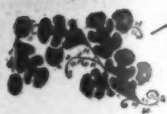
The Wico igniter which generates high tension current for ignition purposes



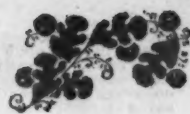
Five-inch hand deck type searchlight with concealed wiring



The Volta magneto, designed to eliminate defects found in other magnetos



Yard and Shop



Loew-Victor Closes Large Contract

The Duesenberg Motors Corporation, of New York, has just closed what it declares to be the largest contract placed at one time for high-speed motors. This has been entered into with a foreign government after very thorough tests of this company's Duesenberg motor, and the contract calls for forty-two eight-cylinder 64x74-inch, 275-400 h.p. Duesenberg patrol model engines. The company has previously supplied the same government with a small number of machines, each one of which has been obliged to pass through a severe test consisting of a five-hour run at maximum, an hour at varying speeds up to 1,500 r.p.m., and a severe backing test. It is interesting to note that this type of Duesenberg motor sells for \$6,250.

Bartsch Joins Advertising Agency

Alfred H. Bartsch, who for the last several years has been advertising manager of the Bosch Magneto Co., of New York City, has recently severed his connections with this concern to become a member of the advertising firm of McLain-Hadden-Stimpers Co., of Philadelphia and New York. In Bartsch's long and successful association with one of the oldest manufacturers of ignition apparatus, he has enjoyed the privilege of being an important factor in the development of the marine engine and allied industries. In his new connection Mr. Bartsch will be able to give his abilities wider range, and we wish him the success which he so well deserves.

Westcott Assumes Managership

Following short upon the heels of the announcement of Mr. Bartsch's retirement from the Bosch Magneto Co., the trade was informed that Robert S. Westcott has assumed the title and duties of advertising manager for the company. Mr. Westcott has been assistant advertising manager of the Bosch company for the last seven years and has made himself a thorough master of the intricacies of the important work which he is now taking over.

Another Trophy Awarded to an Albany Boat

The recent Southern Championship Races at Miami, Fla., were given particular emphasis on account of the performance of Marycel, a fast runabout 42 feet by 7 1/2 feet beam, built by Albany Boat Corp., of Watervliet, N. Y. Marycel, which was built for Charles Deering of Chicago and Miami, is truly a beauty; being constructed of all selected mahogany, finely finished. In competition with Marycel during the Southern Championship races were several other boats, and a beautiful silver cup given by Carl G. Fisher, was the trophy for this race. No doubt it will be of particular interest to lovers of pleasure boating to be reminded

City, the following officers were re-elected for the ensuing year: President, John J. Amory, of the Gas Engine & Power Company and Chas. L. Seabury & Co., Conn., Morris Heights, New York City; first vice-president, Henry R. Sutphen, of the Electric Company, Bayonne, N. J.; second vice-president, Percy C. Jones, of the S. M. Jones Co., Toledo, Ohio; third vice-president, Charles A. Crique, of the Sterling Engine Co., Buffalo, N. Y.; treasurer, James Craig, of the James Craig Engine & Machine Works, Jersey City, N. J. The report of Henry R. Sutphen, Chairman of the Exhibition Committee, showed that the 1917 New York National Motor Boat Show, held in the Grand Central Palace, was by far the most successful exhibition ever conducted under the auspices of the Association. Substantial increases were made in attendance figures, in amount of space sold to exhibitors and in actual sales made during the progress of the show.

Steel Boats for River Front Patrols

The W. H. Mullins Co., of Salem, O., recently shipped to the Carnegie Steel Co., Homestead Steel Works, Munhall, Pa., a 26-foot Auto-boat equipped with 35 h.p. Sterling motor and electric starting and lighting outfits. This boat, which is one of the most completely equipped ever turned out at the Mullins plant, will be used as a patrol boat on five miles of river front.

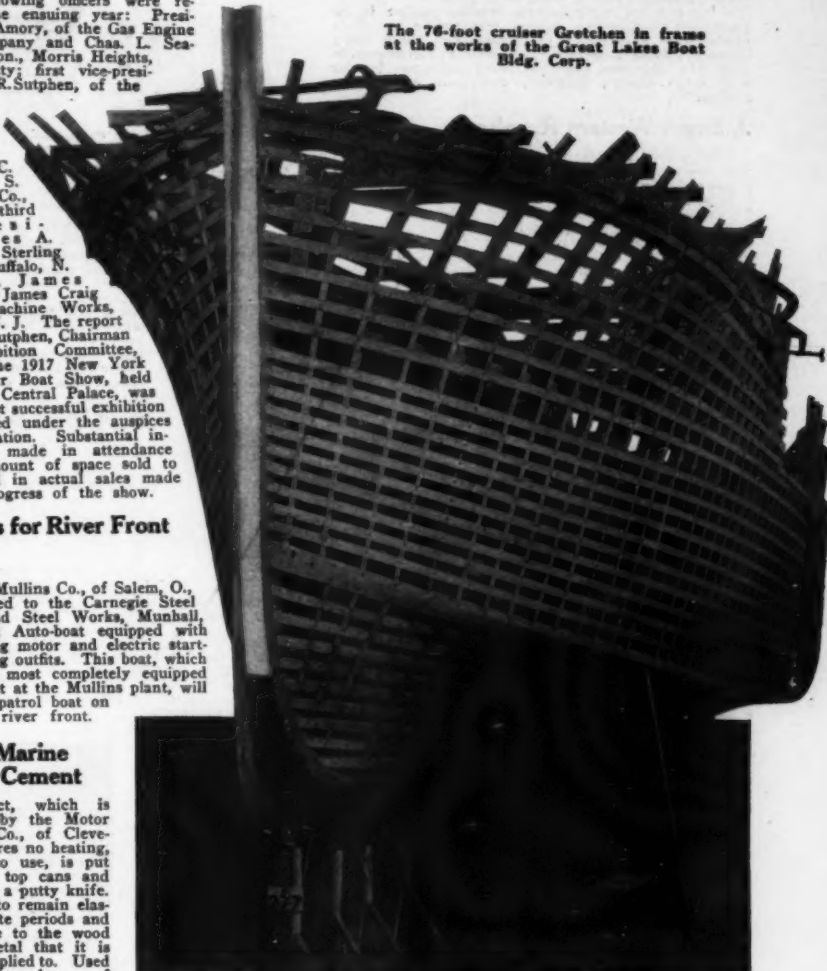
Stay-Tite Marine Caulking Cement

This product, which is manufactured by the Motor Boat Supply Co., of Cleveland, O., requires no heating, comes ready to use, is put up in friction top cans and is applied with a putty knife. It is declared to remain elastic for indefinite periods and to adhere to the wood or metal that it is applied to. Used in place of caulking cotton, it is stated to fill up all checks without spreading the planking and it is excellent for attaching canvas to the deck and canoes, etc. By using a hot flat iron this cement is drawn through the canvas.

The Interior of a Sterling

One of the illustrations on page 36 shows a six-cylinder Model F Sterling opened up so that its design and construction are immediately obvious, providing an excellent opportunity to view the internal mechanism of the marine engine of to-day. These motors are built in eight-, six-, and four-cylinder units and are familiarly known as the Navy type because of their extensive use in volunteer patrol cruisers, many of which, by the way, have recently been called out for active service. A contract for sixteen of the six-cylinder Model F motors for the United States Government is now going through the Sterling shops and they will be used in admirals' barges and battleship tenders. The cylinder construction of these motors is such that the flange is carried up near the center of the cylinder, while a portion of the cylinder is skirted into the base. This construction is intended to give to the cylinder a superior fastening for the thrust is taken more directly against the bolts, instead of against the cylinder flange, which prevents the wearing and weaving of the cylinder while the engine is running. The jackets of the cylinder are carried practically to a point where they meet the upper base, insuring a cool running engine, efficient water circulation and a tendency to hold the oil at

The 76-foot cruiser Gretchen in frame at the works of the Great Lakes Boat Bldg. Corp.



Du Pont Buys Marokene Co.

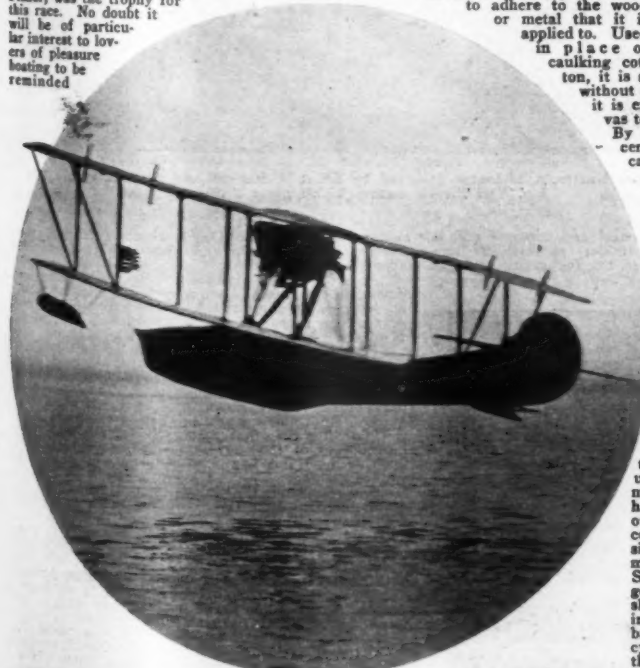
The Du Pont Fabrikoid Co., with main offices at Wilmington, Del., has purchased the Marokene Co. of Elizabeth, N. J. The latter company manufactures a material similar to fabrikoid, which is used extensively by the automobile, carriage and upholstery industries. E. B. Heyward, who has been assistant superintendent of the Fabrikoid Co.'s Newburgh plant will become superintendent of the Marokene plant at Elizabeth, N. J. No changes will be made to the present staff of employees. The purchaser will make thorough investigations in order to learn if any improvements can be made to the product and if possible will better same, thus upholding the Du Pont standard. All the sales transactions of the Marokene Co. will be under the direction of the Wilmington office, and the attention of J. K. Rodgers, sales manager.

Universal Electric Generator Set

The Universal Motor Co., of Oakkosh, Wis., is manufacturing an electric generator set which is applicable to any installation where a smooth, steady current up to 4,000 watts is desired. It is stated to be of exceptional value in installations on the larger motor yachts, where it is used for furnishing current for lighting, wireless, cooking, and searchlight purposes. The generator is direct-connected to the four-cycle four-cylinder Universal motor developing from 9 to 12 h.p., the armature taking the place of the flywheel and the entire plant weighing less than 500 pounds. This generator set is being supplied to our own and several foreign governments where it is used on motor patrol boats, motor repair trucks, etc. It is equipped with a special governor which directly controls the speed and is sensitive and positive in its action, guaranteeing a uniform speed and consequent smoothness of current and flickerless light. It is usually used without storage batteries, but where desired it may be connected with batteries and used for charging. The Universal is supplied in 4 k.w. 60- or 110-volt types.

Nereides

Nereides (page 37) is the property of G. C. Siebrecht, of New York, and was launched, designed and built by George McLain, of Long Island City. The dimensions of this boat are: overall length, 47 feet; beam, 11 feet, and draft, 3 feet. Nereides' frame is of selected white oak and the planking is white cedar in narrow streaks, copped fastened. The main deck is white pine yacht laid and finished bright. The trunk cabin and all trim are in African mahogany. The fuel is carried in three tanks, giving a total capacity of 200 gallons, and there are also tanks for fresh water which carry 75 gallons. The forward part of the hull is given over to the



A new flying boat built by the General Aeroplanes Co., of Detroit, Mich., and powered with a 100 h.p. Curtiss motor. It is of the finest construction throughout and is built with a factor of safety of seven

that a 30-foot Albany runabout with a six-cylinder Van Dierck motor entered by L. L. Tripp, president of the Albany Boat Corp., won the championship last year.

N. A. E. & B. M. Affairs

At the March meeting of the Executive Committee of the National Association of Engine & Boat Manufacturers, held at the Engineers' Club, New York

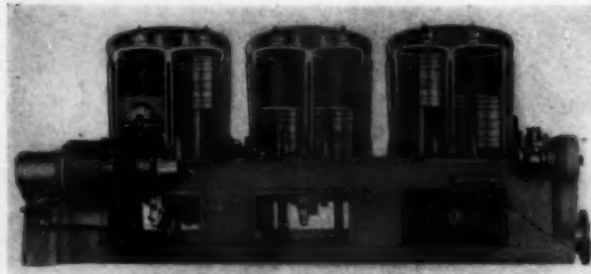
forepeak and galley, which latter is roomy and unusually complete, containing a large refrigerator extending the full width of the boat, alcohol stove, sink, drain board, dish racks, etc. Aft of the galley is the main saloon which is finished in white enamel; all doors and trim are in solid mahogany. This cabin has a skylight overhead and contains a mahogany dining table, two large transom seats covered with green plush which form comfortable beds, a buffet, enclosed locker, and a toilet room adjoining.

A six-cylinder medium-duty Sterling engine is installed aft of the main saloon, just amidships. This power gives a speed of 15 m.p.h. The trunk cabin forms a private stateroom fitted with two comfortable beds. In this room there is also a mahogany bureau with large mirror, lavatory, and four lockers for clothes.

A Smart Western Runabout

Admirers of Mr. Hand's work will instantly recognize the accompanying photograph of Dimples as his popular design No. 341.

This 25 x 5-footer was built by C. C. Lafferty at Lakeside on Lake Chelan, Wash. The power plant is one of the popular Series B all-enclosed four-cylinder Scripps machines with electric starting and lighting system. The hull is handsomely finished in quarter sawed oak, the planking is Port Oxford cedar, the



A six-cylinder Model F Sterling motor laid open so that the design and construction of the cylinders and crankcase are readily apparent

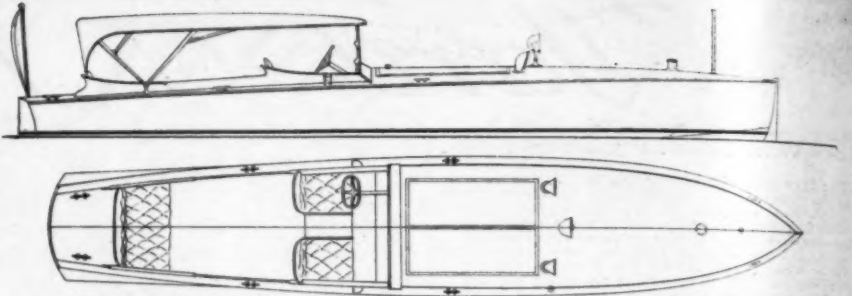
frames of oak, and the battens of spruce. Mr. Lafferty has equipped his boat with high-class fittings throughout, including Kenyon top, Hall wheel, Mechanical Devices shaftlog and strut, and Columbian Rocket propeller. Our friends out West build much more heavily than in the East. This, considered that Dimples is a consistent 19-miler, reflects great credit on builder, designer, and engine maker alike.

Richardson Boat Co. Busy

The Richardson Boat Co., of North Tonawanda, N. Y., informs us that its shop is full to overflowing with boats of various types under construction. The most important of these are a 56-foot houseboat for Charles Gardner, of Newtonville, Mass., and a 42-foot express cruiser for A. F. Clark, of McKeesport, Pa. Other craft now building are a 30-foot cruiser, two 33½-foot runabouts, a 22-foot runabout, and a complete K-D 25-footer; this last is being built for a customer in Ecuador. The company's leader in its line for 1917 is a 25-foot runabout furnished either in K-D or complete that has been greatly refined and improved in many ways over the last year's model. This is a comfortable runabout designed more for medium than high speeds, and it is declared to be strictly up-to-date in every respect. Through an unfortunate error in the company's advertisement in our February issue, this craft was referred to as a leader for 1916.

Keen Kutter

One of the illustrations on this page shows an extremely attractive 36-foot runabout, designed by Elliott N. Burwell, of Boston, Mass., and powered with a 100 h.p. Van Blerck motor. The hull is of the light displacement type, of easy lines, fairly sharp entrance, flam bow, Normand V-stern, and graceful counter. The construction is of moderate weight with frames of oak and planking of cedar; all deck and interior finish is mahogany color of a very deep shade. The seats are of leather with full automobile spring



An attractive high-speed 32-foot V-bottom runabout recently designed by the Niagara Motor Boat Co., of North Tonawanda, N. Y.

cushions. A silk mohair top adds to the appearance of the craft which also carries spray cloths and an adjustable windshield. A comfortable feature is the bulkhead which makes it a simple matter to get into the motor pit in rough weather when it would not be convenient to adjust the windshield. Keen Kutter was built for a summer sojourner at Lake Winnepesaukee, N. H., where she has proved to be fast, comfortable, and easy in a heavy sea.

New Plant for Valspar

When Valentine & Co., of New York City, introduced Valspar to the marine world, it was given a nautical name because it was meant to be the perfect boat varnish. The long series of laboratory experiments which preceded its production aimed at the discovery of a varnish which every boat maker and owner demanded—one that would not turn white in fresh or salt water. When marine men found that Valspar actually stood up to its job without renewal every few months their call for it was immediate. Season by season the demand for it has increased until now, after eight years of manufacture, its sale is declared to far exceed any other.

But the water-proof qualities which had made its demand for the marine field so great soon opened an outlet for it in the realm of the landlubber where it is used on all natural woodwork and furniture. To-day the call for Valspar ashore is actually greater than that for it afloat. Consequently Valspar, which had begun as a specialty of the Valentine company each year took a bigger space in the factory until the baby was uncomfortably crowding its older brothers. So in order to give it adequate room, and with a businesslike feature for its future growth, a new plant has been built for its exclusive accommodation. This factory, located at Williamsburg, N. Y., is of steel and concrete and is equipped with automatic sprinklers to make it absolutely fireproof. It provides for the entire business of Valspar packing, handling and shipping, and prac-

tical skill has been employed in its arrangement and equipment to provide devices for labor and time saving. There is an experimental laboratory on the top floor, and the showroom contains many impressive comparative tests of varnishes which demonstrate effectively how Valspar resists water and weather. The extent of the present demand for Valspar is suggested to a visitor at the Valentine plant when he passes along the rows of giant tanks each containing from 2,500 to 25,000 gallons.

Regal Motors in Spain

Special interest should attach to the following item pertaining to a Regal motor (manufactured by the Regal Gasoline Engine Co., of Coldwater, Mich.) because it is a translation of an article which appeared in the newspaper *El Popular*, of Malaga, Spain, and reveals the high opinion in which this motor is held in Spain:

"Invited by Senores Sell Soler y Compania, naval constructors living in this city, we assisted yesterday in an official test of a motor tugboat constructed by said gentlemen and which boat is destined for towing operations between Rio Martin and Tetuan.

"This boat has been purchased by the Spanish Government and will be placed in a short time at the disposal of the officials at Tetuan.

"The characteristics of the boat are as follows: a 36 h.p. American Regal engine, giving a speed of 12 m.p.h.; dimensions, 12.3 meters long by 3.15 wide by 1.2 deep.

"It has a very clean cabin for passengers and another one where the motor is installed.

"Assisting in the official test were Sr. Belin, a



Keen Kutter, a 36-footer designed by Elliot N. Burwell and powered with a 100 h.p. Van Blerck motor, which gives a 30-mile speed

representative of the Comandante de Marina, the engineer Sr. Crusellas and many other prominent officials.

"At 4:30 in the afternoon these guests were conducted to the boat and were given a trip lasting about an hour along the coast. The operation of the engine was in charge of a capable mechanic, don Andres Martinez.

"The trip ended excellently and the tests realized were very satisfactory. All eulogized the good capacity of the boat, its excellent operation, and the care with which it had been constructed. This is the first boat of the kind which has been constructed in Malaga. For this reason we wish to praise the good work of the Sra. Sell Soler y Compania, who have given proof of their love for Malaga and have built up this new industry at considerable expense and trouble.

"On returning the guests were invited to the Mediterranean Club House where they were feasted with pastries and wine."

Arrow, of South Boston

One of the accompanying illustrations shows Arrow, owned by James Bertram, and enrolled in the South Boston Yacht Club. The picture was taken near the clubhouse of that organization.

Mr. Bertram's boat is powered with a model F, 28-36 h.p. Red Wing Thorobred motor, made by the Red Wing Motor Co., of Red Wing, Minn. This power plant drives Arrow at 18 real miles an hour. The boat is a 20-foot V-bottom with 4-foot 8-inch beam and is rated as one of the most reliable, as well as one of the speediest outfits in the South Boston Club.

Correction Notices

Because of a quite natural inability to check up on every bit of information which comes to us from our friends in the trade, it sometimes happens that we are guilty of giving credit where it is not due, or of so distorting the spelling of a man's name that the bearer of it himself would not recognize it. The latter instance occurred on page 21 of our March issue in a description of the boat Gosling, owned by G. G. Whitney, of Boston, Mass., wherein we spelled



Dimples is a pleasing 25-foot Hand runabout owned by C. C. Lafferty, of Lake Chelan, Wash. Equipped with a Series B all-enclosed four-cylinder Scripps, she is a consistent 19-miler



The new plant of Valentine & Co., at Williamsburg, N. Y., is complete with every modern device. Here Valpar varnish is made in ever increasing quantities

Mr. Whitney's name "Whiting" and declared that his boat hailed from Boston instead of Marblehead. We thank Mr. Whitney for calling our attention to these errors.

In an earlier issue (February, page 18) we were led into powering the 40-foot cruiser Junco, owned by C. K. Benedict, of Sewanee, Tenn., with the wrong make of motor. The engine in Mr. Benedict's cruiser is, we are now informed, a four-cylinder Model F Sterling which has been giving ideal satisfaction for nearly a year.

Navy Buys Chingachgook

The Navy Department has purchased Chingachgook, the Greenport scout boat, which attracted so much interest at the recent motor boat show. Preparedness is the watchword of the Greenport people, and they have immediately set down the keel for a new boat



Arrow, owned by James Bertram and enrolled in the South Boston Yacht Club. She is a 20-footer of 18-mile speed powered with a 36 h.p. Model F Red Wing Thorobred

of this type for their own use this summer in the naval maneuvers.

The new boat will be practically a duplicate of Chingachgook, except that she will be somewhat faster, inasmuch as the power plant will be larger. The new boat will be powered with two six-cylinder 64 x 7 1/4-inch Duesenberg patrol model engines, which will be turned at 1,250 r.p.m., developing approximately 240 h.p. each at this speed.

Also the Greenport company is building for Captain J. J. Phelps a 72-foot scout boat on the same lines, and the power plant will consist of two eight-cylinder 64 x 7 1/4-inch Duesenberg patrol model engines, turning 1,250 revolutions, developing 350 h.p. at this speed, with a reserve of 75-80 h.p. in each motor, as they can be turned up to 1,500 when necessary.

It is also of interest to know that the Greenport company has secured a contract from a foreign government for eight 72-foot patrol boats, similar to the one they are building for Captain Phelps and that each one will be powered with three eight-cylinder Duesenberg motors.

New Corporation Formed

A. H. Ackerman, formerly vice-president and general manager of the U. S. Light & Heat Corp., and C. C. Bradford, formerly sales manager of the same company, have asked us to announce the formation of the Bradford-Ackerman Corp. with offices in the Forty-second St. Bldg., New York City, to represent manufacturers of electrical apparatus, factory, automobile and railway supplies for domestic and export trade.

Boatman Enters Movies

A great many friends and admirers were agreeably surprised recently to see Capt. Chas. E. Wellman proudly pilot his good ship Clio II across the screen. It will be remembered that Captain Wellman finished, without a single mishap, his now famous 12,000-mile Chicago-Chicago cruise via the Illinois and Mississippi Rivers, Gulf of Mexico, the Keys, the Atlantic, the Hudson River, Erie Canal and Great Lakes in his 40 x 9-foot Clio II, powered with a 24 h.p. four-cylinder Anderson engine. The moving pictures referred to were taken at Pensacola, Fla., while on his second trip, en route to Miami, where he has spent the winter.

Bluff, an Addition to the N. Y. Y. C. Fleet

R. T. Wilson, of New York, has just received his new 40-foot military type express cruiser from the Great Lakes Boat Building Corp. which he intends to cruise up North from his Southern home, Savannah, and bring to the New York Yacht Club for cruising next summer.

Mr. Wilson's boat is similar in both appearance and arrangement to the usual military type express cruisers constructed by the builders. The arrangement permits of the utilization of every foot of space for some good purpose. The galley, fully equipped, is placed in the bow, followed by the main cabin with extension type seats handsomely upholstered over deep box spring cushions. The bridge, to which all controls are carried for one-man operation, is between the main cabin forward and the owner's stateroom aft. The engine is located under the bridge and is completely housed and protected, and yet made instantly accessible by means of specially designed hatches. The owner's stateroom, which adjoins the fully equipped lavatory on one side and a large wardrobe on the opposite side, is also fitted with extension type seats. The cockpit aft is large and inviting, as it is completely protected in both heavy and fair weather.

The six-cylinder 6 x 6-inch Van Blerck, new and stiff, gives the boat a turn of speed of over 21 miles an hour, which, considering the substantial construction and the accommodation of the boat, is thought exceptional.

S K F Branches Out

The Canadian S K F Co., Ltd., has been organized under Dominion charter for the manufacture and sale of S K F self-aligning ball bearings in Canada. All correspondence should be directed to Toronto in which city headquarters have been established at 47 King St., West.

Uncle Sam Uses the Gray

Uncle Sam is a careful and discriminating buyer and when he chooses to put his O. K. upon any goods, whether they be marine motors or steel bridges, one may be pretty sure that they are about as they should be. That he has endorsed the Gray marine motor, both the Model D and the Model F, is evident from the fact that he has recently purchased for the United States Coast Guard Service eight four-cylinder four-cycle Model D 20-24 h.p. motors and three of the 12-15 h.p. Model F machines, as a preliminary order. These motors are being placed in the tenders of the cutters in the Coast Guard Service and also in motor lifeboats. One has been placed in a boat belonging to the cutter Seneca now stationed at Tomkinsville, Staten Island, N. Y., and this boat may be seen in a photograph on the next page. Another has been placed in a boat belonging to the steamer Itasca, which is now stationed at San Juan, Porto Rico, while a third has been sent to the Coast Guard Training Station at New London, Conn., for experimental purposes.

The importance of having a motor which is absolutely reliable and which also possesses the greatest amount of strength and endurance is obvious when it is remembered that these boats are placed under conditions of the very severest character, where a motor breakdown would mean disaster and the loss of many lives.

J. M. Witters Joins Grossman

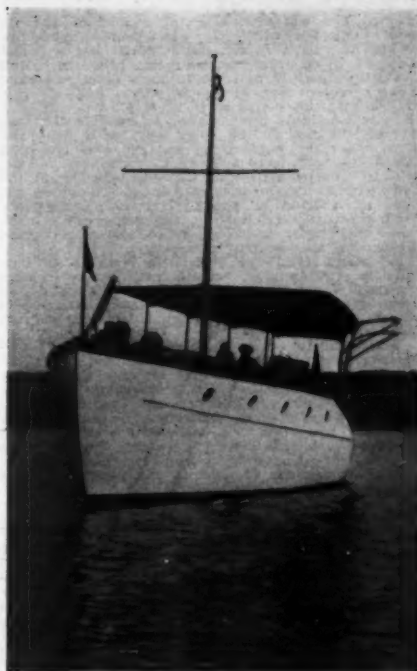
Announcement was recently made that J. M. Witters had joined the organization of the Emil Grossman Mfg. Corp. of Brooklyn, N. Y., and that he would represent the firm in the sale of Red Head spark plugs and Ever Good motor necessities among the manufacturers of the Middle West. Mr. Witters is well known to the trade, as he has been actively identified with manufacturing interests for the last ten years.

Aetna Flag and Banner Co.

Under this name, L. L. Buckles, formerly of Annin & Co., has gone into business at 125 East Twenty-third St., New York City, where he is handling a complete line of flags, banners, and pennants of every description. Mr. Buckles informs us that his prices are attractive and that deliveries are prompt.

Henricks Lighting Outfit

The Henricks Magneto & Electric Co., of Indianapolis, Ind., is manufacturing several types of house and motor cruiser lighting outfits in which simplicity and reliability are two of the most prominent features. The smallest of these plans, selling for \$100, consists of a 12-16-volt, 25-ampere 400-watt generator with automatic cut-out, fuses and ammeter, and an 80-ampere-hour six-cell rubber jar storage battery mounted on the base with the dynamo. The plant has a capacity for twenty 16 c.p. lights and the battery alone will carry ten lamps



Nerides, a 47-footer owned by George C. Siebrecht, of New York, is an attractive boat of last season's vintage. She is equipped with a six-cylinder medium-duty Sterling installed just aft of the main saloon

four hours. The larger sizes include in the equipment asbestos switchboards mounted directly on the generators, and it is possible to equip at a slight extra cost an attachment for this switchboard which starts the engine without cranking. The generator used with these outfits is the product of several years' engineering experience, and it is stated to combine simplicity, efficiency and durability. The armature is wound with great care, the commutator is of an extra heavy type with large brushes, and Norma ball bearings are used.

Use of Motor Boats Undeveloped at Barcelona

The length of seacoast and favorable conditions in the neighboring waters would cause one to expect a larger number of gasoline and kerosene motor craft in the Barcelona district than are to be observed. Some pleasure boats of this class are attached to the local yacht clubs, and launches for the use of harbor boards and pilotage services are found in the several ports, but there should be a larger demand than there is for practical American motors for pleasure craft.

It is probable that the number of heavy-duty oil motors for fishing vessels will increase here, as the few in use in and about this port are rendering a service which the owners of competing craft are not able to get from sail power alone. There are indications of a larger demand for internal combustion motors here.

Motors of Sulzer Frères of the Sulzer-Diesel type are much used here, and a Spanish firm, Carlos Curtet, S. en C., of Valencia 355, Barcelona, manufactures a gasoline motor that is generally liked. The Sociedad General de Aplicaciones Industriales, of Rambla Catalunya 45, Barcelona, handles naphthalene, creosote, and gasoline motors of various kinds. Besides these the motors of Crossley Bros. are largely employed, and also the Motores Vellino, of the Laboratorio Vellino, Bruch 127, Barcelona, adapted to gasoline, petroleum, and creosote.

Finish and price are important, but strength and practicability are the chief requirements.—From the Consular Reports.

Belle Isle Boats

The Belle Isle Boat & Engine Co., of Detroit, Mich., is located on the Detroit River, opposite Belle Isle, famous as the recreation ground of Detroit and a Mecca for boats of every description. It is fitting, therefore, that it should have developed to a remarkable degree its fast V-bottom speed run-



A naval patrol scout cruiser for coast defense. Merry Sunshine, now being completed at the yard of Smith & Williams, of Salisbury, Md., for Otis H. Cutler, of New York, is a 60-footer powered with two six-cylinder Model F Sterling motors

about. The entire facilities of a modern and recently enlarged plant are concentrated upon two models, one 25 x 7 feet, the other 26 feet x 7 feet 3 inches, which have the same style and characteristics but are sufficiently modified in form to accommodate a very wide range of power plants from 20 h.p. to 250 h.p. with speeds of 16 to 45 miles.

Belle Isle boats are declared to combine the fast, snappy qualities of the speed boat with seaworthiness, while the ample beam and generous freeboard afford the passengers a sense of roominess and security. Incorporated into them will be found the conveniences and luxuries of the modern motor car, such as isolation of power plant from passengers, electric starting and lighting, full automobile control, with instruments mounted on an instrument board where they may be read at a glance.

A safety feature of Belle Isle boats is an irreversible steering gear, actuating the rudder without the use of the usual tiller ropes. The Belle Isle steering gear is positive and connected to the rudder direct. The general equipment is complete to the last detail.

The Belle Isle plant includes an electrically operated marine railway, capable of hauling out good-sized cruisers, and a complete machine shop, where engine overhauling and general machine work may be handled quickly. The company conducts a general boat store, where a large supply of paints, marine hardware, boat fittings and equipment is carried. This concern also carries in stock a complete line of marine engines, including eight different makes of inboard four-cycle engines, as well as the popular rowboat motors.

Oluf Mikkelsen Handles New York Territory

In our short biographical sketch of Oluf Mikkelsen, the New York manager of the Evinrude Motor Co., of Milwaukee, Wis., in the Personalities Column of our March issue, we fear that we gave our readers the impression that Mr. Mikkelsen is in charge of the foreign business of this company. Mr. Mikkelsen was connected with an export house in New York when he saw the possibilities of the Evinrude motor and was instrumental in securing for his firm the sale of Evinrudes in foreign countries. Since April, 1912, however, Mr. Mikkelsen has been New York manager for the Evinrude and has had entire charge of the territory in the vicinity of this city. His present offices at 69 Cortlandt St., New York City, are many times larger than the small quarters in West Broadway where he began laying the foundation for the large volume of business which he now swings in this territory.

Ilanasilk Life Saving Equipment

The developments made in life-saving equipment through the inventions and patents of Lieut. S. F. Edmonds, U. S. Coast Guard, Retired, and the use of Ilanasilk as manufactured by the Robinson-Rodgers Co., of Newark, N. J., have an important bearing on preparedness in connection with the patrol fleets now organizing.

The life preservers, safety pillows and safety mattresses are known as the Universal Ilanasilk life-saving equipments and have now been in use for over three years on many yachts and motor boats.

The safety pillow, ship life preserver and patrol life preserver of this company's manufacture have been approved by the U. S. Steamboat Inspection Service, are inspected and stamped for use on all vessels, and may be used in place of cork belts.

The mattresses are fitted to form efficient rafts in case of need and are declared to make an important addition to the life-saving equipments of any vessels having mattresses on board.

It is stated that where motor boats, tugboats, etc., are enrolled for Government service, the supplying of these equipments will bring the life-saving outfits of these vessels up to the standard of other Government vessels, while they also comply with the U. S. Steamboat Inspection Service regulation.

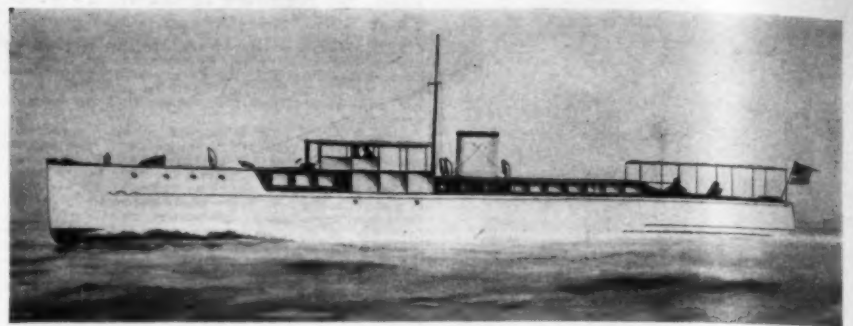
R. A. Oglesby

In the limited space at our disposal this month, we haven't room to more than sketch in the busy life of R. A. Oglesby since he entered the marine field in 1910 by taking a job with the Hercules Electric Co. While on the road for the Hercules company he fell in with Otto M. Knoblock and with him formed a mutual admiration society on the spot. The result was that Mr. Oglesby's business cards thereafter carried the title Chief Engineer of the Knoblock-Heideman Mfg. Co. Newspaper reports at the time elected Mr. Oglesby president of the National Gas Engine Association, and though the title was misplaced, our hero prizes the honor very highly. Subsequently he had the pleasure of developing the first light-weight



R. A. Oglesby

alternating current direct-connected magneto for make and break ignition, but as several of the company's customers had urged it to bring out a flywheel type magneto, Mr. Oglesby came up for a breath of air and developed the machine which the company (under the new name of Quick Action Ignition Co., of South Bend, Ind.), is now manufacturing. It met with instant success, and the funeral



Outboard profile, arrangement plan and wash drawing of Gretchen, the handsome new 76-foot express cruiser now under construction by the Great Lakes Boat Bldg. Corp., of Milwaukee, Wis., for Albert Pach, of East Chicago, Ind. This handsome cruiser will be powered with two eight-cylinder 400 h.p. Duesenberg motors

Gretchen, a New 76-Foot Express Boat

Gretchen, shown in the accompanying illustration, is a new express cruiser 76 feet in length which was designed and is now building by the Great Lakes Boat Building Corp., of Milwaukee, Wis., for Albert Pach, of East Chicago, Ind. Experience gained by the construction of a long line of express cruisers has enabled the builders to assure the new owner of an unusual turn of speed (28 miles an hour) in a big able cruiser whose accommoda-



Uncle Sam chose one of the new model four-cycle Gray motors for installation in this Coast Guard tender Seneca which is stationed at Tompkinsville, S. I.

tions are laid out in an attractive manner in point of comfort and convenience. The hull construction is most interesting and worthy of special mention. As will be noted from our heading illustration, page 35, steam-bent frames on short centers and longitudinal seam battens form the framework, over which are applied two courses of planking. The inner skin is of cedar laid diagonally over the frames and battens. The outer course is of mahogany laid longitudinally with the plank seams centered on the battens.

In the forecabin comfortable quarters are pro-

vided for a crew of four, and directly aft is an exceptionally roomy and well arranged galley with stove, large ice-box and sink, with liberal provision made for dish and provision lockers. The main saloon is a large and attractively arranged compartment, which is entered from the bridge by companionway stairs which are set inboard on an easy sweep. On either side is provided a long seat with high back, both seats and backs being upholstered over a deep box spring construction. Sleeping accommodations are thus provided for a party of four, as the seat backs are arranged Pullman fashion to swing up for upper berths. In addition to a connecting toilet, hanging lockers on either side forward and a large buffet are also provided. The bridge deck, due to its size, is a most attractive feature, being 8 feet in length and extending the full width of the boat—13 feet at this point.

The engine-room is located exactly amidships and in it will be two eight-cylinder 400 h.p. Duesenberg engines made by the Duesenberg Motors Corp., of New York (formerly Loew-Victor). Each machine is equipped with such auxiliary units as electric starter, bilge oil, air and fuel pumps, while a Matthews independent generating set will supply current for lights throughout the boat.

Koban Rowboat Motors

The Koban Mfg. Co., of Milwaukee, Wis., manufacturer of the well-known two-cylinder Koban rowboat motor, is showing two new models in a catalog which has just been issued. These models are known as the Model E fitted with built-in magnets, and the Model E fitted with battery ignition. The Koban people claim this year's models to be the finest they have ever turned out; they contain numerous improvements and refinements over models of previous years. The airplane type built-in-the-flywheel magneto is used.

Obituary Notice

At the last moment before going to press we learn with the deepest regret of the sudden death of A. J. Mitchell, Advertising Manager of the Sterling Engine Co., of Buffalo, N. Y. Mr. Mitchell had been an energetic and resourceful member of the Sterling organization for a period extending over eight years, but had given his attention to the company's advertising affairs only for a matter of months. As manager of the Service Department his courtesy and tact made many friends for his company and for himself, and his loss will be keenly felt by many hundreds of Sterling owners and throughout the trade in general. Young man though he was, Mr. Mitchell had given evidences of unusual ability, and we, in common with his many other friends, feel that his death has cut short a career of great promise.

Personalities

expression on Mr. Oglesby's face is induced by much ingrowing meditation over the rapidity with which orders come in and raw materials advance in price. Which is all we have room to say—except that the chief engineer of the company is now also sales manager of the magneto department.

H. C. Barnes

Mr. Barnes, ushered into this world in 1886, has been actively engaged in the motor boat industry for the last nine years. He has been a keen boatman since he stepped out of the cradle, and declares his enthusiasm is original with him, as his antecedents had no use for the water.



H. C. Barnes

We understand him to refer to those bodies of water which one finds in lakes, oceans, and such places, and not the H₂O that comes out of the faucet. Mr. Barnes lives, breathes and has his business in Cleveland, O., where he conducts the Motor Boat

Supply Co. at 1411-15 West Ninth St.—a concern that is well and favorably known throughout the country. He is a member of the Cleveland Yacht Club and the Cleveland Power Boat Club, and is the owner of a comfortable old cruiser which contributes largely to his joy in living. Two years ago he had the fastest speed boat in the vicinity of Cleveland, but now he devotes his surplus energy to speeding up the further development of his marine supplies business.

C. Z. Kroh

Mr. Kroh, who is president of the C. Z. Kroh Mfg. Co., of Toledo, O., has been actively engaged in the manufacture of tops and cushions for the last forty years. His talents were first directed to the production of these articles for carriages, but when the first horseless carriage came along Mr. Kroh climbed aboard and directed his attention toward the automobile industry. For six years, however, he has been manufacturing tops and cushions for motor boats, and his products have received deserved recognition in all parts of the world, and Chicago, Ill.



C. Z. Kroh

Uncle Sam to Build Patrol Boats

(Continued from page 7)

went so far as to get out two designs for standard boats, offering to furnish complete plans and specifications without charge to any yachtsman who might be interested in building such a craft.

A boat was built by the Government from each of these plans, one a 45-footer, built by Lawler, and the other a 66-footer, built by Luders (full specifications of these boats appear on pages 40 and 41 of this issue of MoToR Boating), to show the yachtsmen a type of boat which the department preferred.

But for war purposes both of these types were more or less makeshifts, as the Government does not hesitate to acknowledge, their main purpose being for pleasure and cruising, and their war value being of lesser, if not almost insignificant, value. However, for what they are intended they will serve their purpose well.

The only other motor boat which the Government has been financially interested in is the one recently completed by the Greenport Basin & Construction Co., and so far only given an unofficial trial trip. But this boat, which is really the first war motor boat built, was for another purpose, and intended as an experimental motor torpedo boat. She is expected to be extremely fast—nearly 40 knots—to have a torpedo tube mounted on her, and if this boat, which is only a 50-footer, is found seaworthy under the above conditions, her duty will be to make use of her torpedo to fire at large and expensive ships, and then run to cover. She will not be a submarine destroyer, and will not carry any guns of moment.

With the passing of the bill, carrying with it the appropriation for the Navy during the last hours of the recent session of Congress, the Department was given the power which it had long wanted, but was lacking, for the building up of a real fleet of armed motor boats. It lost no time in beginning work.

The Government had recent confidential and reliable information relating to the performances of the 60-foot and 85-foot motor boats being used on the other side of the ocean for the same service, and this indicated that while both of these types had proven excellent, yet they were not perfect. Other information which the Department had in its possession led it to the conclusion that a type of boat of not less than 100 feet in length should be chosen.

No one has ever doubted when it comes to the design and construction of larger ships, battleships and the like, that the personnel of the Navy Department is thoroughly capable of handling the situation, and turning out designs and plans second to none in the world. However, in the matter of small boat practice, the above is not true, and the Department has recognized this fact. What more logical thing could they do than call upon one of the ablest of our motor boat designers, and, therefore, a call was issued to A. Loring Swasey, formerly of the firm of Swasey, Raymond & Page, of Boston, to go to Washington to assist in co-operating with the

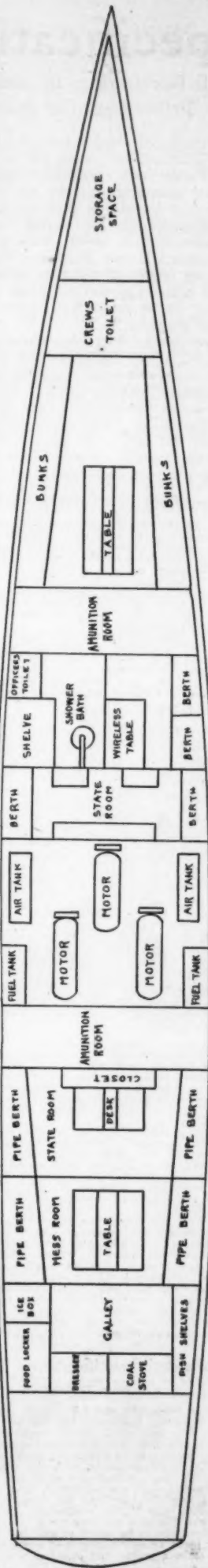
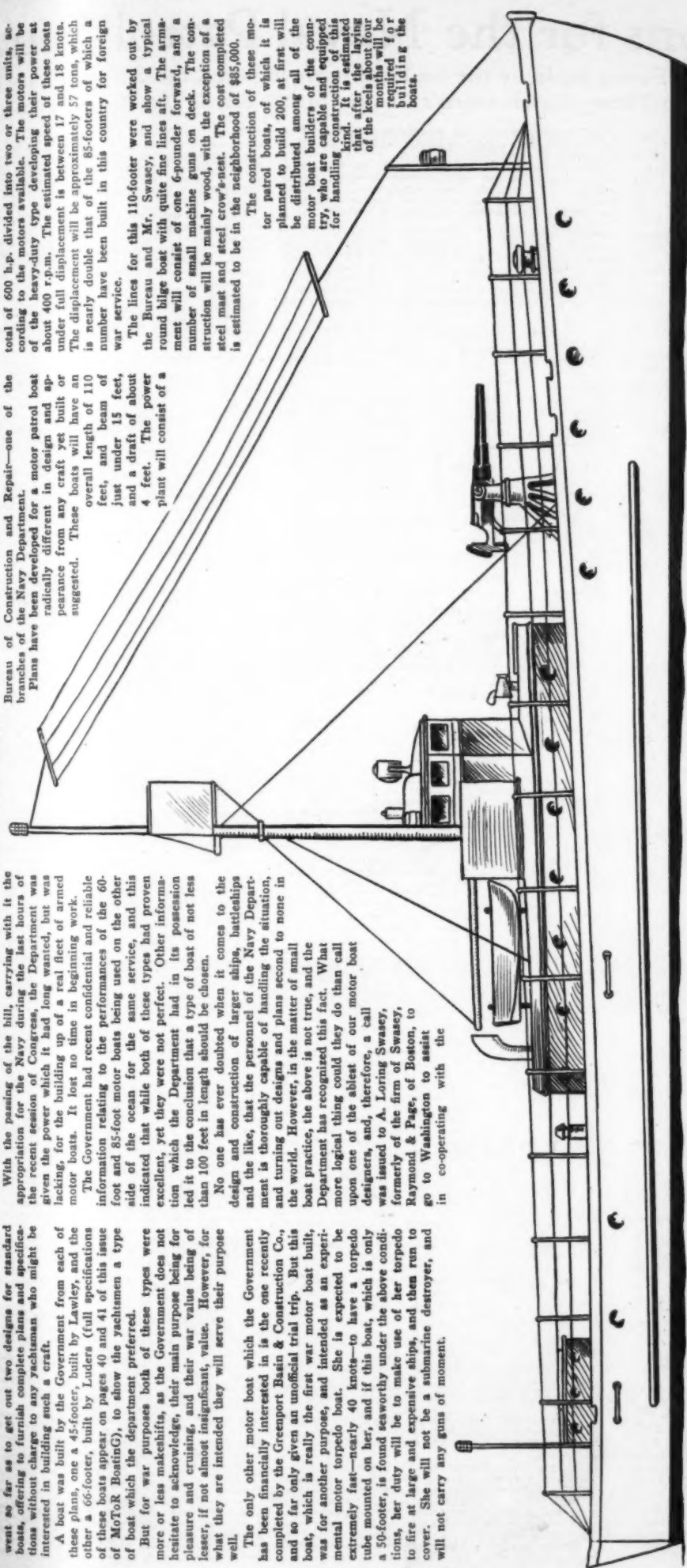
Bureau of Construction and Repair—one of the branches of the Navy Department.

Plans have been developed for a motor patrol boat radically different in design and appearance from any craft yet built or suggested. These boats will have an overall length of 110 feet, and beam of just under 15 feet, and a draft of about 4 feet. The power plant will consist of a

total of 600 h.p. divided into two or three units, according to the motors available. The motors will be of the heavy-duty type developing their power at about 400 r.p.m. The estimated speed of these boats under full displacement is between 17 and 18 knots. The displacement will be approximately 57 tons, which is nearly double that of the 85-footers of which a number have been built in this country for foreign war service.

The lines for this 110-footer were worked out by the Bureau and Mr. Swasey, and show a typical round bilge boat with quite fine lines aft. The armament will consist of one 6-pounder forward, and a number of small machine guns on deck. The construction will be mainly wood, with the exception of a steel mast and steel crew's seat. The cost completed is estimated to be in the neighborhood of \$85,000.

The construction of these motor patrol boats, of which it is planned to build 200, at first will be distributed among all of the motor boat builders of the country, who are capable and equipped for handling this kind of construction. It is estimated that after the laying of the keels about four months will be required for building the boats.



Approximate plans of the 110-foot motor boat, designed by the Navy Department, to be used as a submarine destroyer. It is planned to have several hundred of these boats built at once. They will be powered with three 200 h.p. heavy-duty gasoline motors.

Specifications for the Naval Patrol Scouts

Full Particulars of the 66-Footer Built by the Luders People for the United States Navy Here
Published for the First Time—Government's Requirements for the Lawley 45-Footer

THROUGH the kindness of the Luders Marine Construction Co., of Stamford, Conn., we are enabled to publish here-with the complete builders' specifications of the 66-foot Naval Patrol Scout, built by the Luders people for the United States Navy. The specifications, which have not hitherto been printed in any magazine, should be of particular interest at this time when the attention of a large proportion of our populace is centered on the availability of the motor boat for war purposes.

In addition to the complete specifications of the larger of the two boats ordered last year by the Government for the purpose of stimulating private owners' interest in dual purpose boats, we are also publishing the Government's requirements for the 45-footer which was successfully bid for by the Geo. Lawley & Son Corp., of Neponset, Mass. These, because of their brevity, are taken up first:

Specifications for the 45-Footer

THE intent of this purchase is to obtain the best boat at a price of \$12,000 which will be acceptable to private owners for personal use and which will have also the essential features called for below for Government use as patrol boats in time of war. Award to be made on the basis of the most suitable design submitted having characteristics not less than stated in these specifications and combining to the greatest degree serviceability for naval purposes and for pleasure purposes.

Suitable deck and structural arrangement to carry, forward of amidships, a 1-pounder gun capable of being fired under service conditions without damage to the boat. Blueprints showing the general arrangement of the gun, gun mount, and details of the deck circle may be obtained on application to the Bureau of Construction and Repair, Navy Department, Washington, D. C. A suitable foundation for the gun must be provided, and the deck circle will be installed by the contractor. The gun, gun mount, and deck circle will be furnished by the Government.

The boat to have adequate structural strength, sufficient stability, and to be of suitable design to insure seaworthiness in the open ocean.

The propelling machinery to consist of two or more gasoline engines driving two propellers. Motors to have electric self-starters.

To be equipped with an electric plant, including running lights, searchlights, storage battery, and charging equipment.

The propelling machinery to be of such power, construction, and reliability that on a continuous ten-hour endurance test in the open ocean, with a moderate sea running, the engine will average a speed, measured by standardized screw method, of 85 per cent. of full speed specified. This endurance test to include between the second and eighth hours a four-hour full-speed trial during which the average revolutions per minute shall not be less than those required for the full speed specified.

Gasoline and lubricating oil supply to be sufficient for a cruising radius of 500 miles at 85 per cent. full speed.

The boat will carry a 10-foot tender. The tender to be furnished as part of the outfit and will be included in the price.

TRIALS:

The contractor will be required to run the following trials, at his expense, in the presence of Government representatives, on a displacement including the weight of the gun, mount, and ammunition; full gasoline and oil tanks; complete outfit and normal complement.

(1) Five full-speed runs over a measured mile course shall average a speed not less than that guaranteed by the contractor in his bid, as full speed, which shall be the highest speed specified.

(2) Three standardization runs for speeds at revolutions per minute equal to 90, 80, 65, and 50 per cent. of revolutions per minute corresponding to full speed.

(3) Fuel and lubricating oil consumption data to be taken during the endurance run.

(4) Continuous ten-hour endurance run as specified previously during which the consumption of lubricating oil and fuel as recorded shall give a cruising radius of 500 miles at 85 per cent. full speed.

(5) During all these trials the revolutions per minute shall be obtained by taking readings of a positive recording revolution counter. The difference between successive readings, divided by the elapsed times in minutes to give the revolutions per minute made.

Builders' Specifications for the 66-Footer

TO be a seaworthy staunch vessel, concave or hollow V-bottom, built with the best of material and workmanship, and equal in all respects to the very best yacht practice. The guaranteed speed of this boat to be 30 statute miles per hour, deep load draft, as called for in the schedule, with the engines turning about 1,400 r.p.m.; this service speed will be increased as stores and fuel are consumed, and in the event of need can be increased by turning the motors faster, 1,600 to 1,700 revolutions being practical though not desirable for long runs.

No advantage to be taken of any inadvertent omission on plans or specifications of any essential necessary to make a proper and complete vessel.

All lumber, bronze, and iron as may be needed to be of the best grade obtainable, and as described below.

The intent of this specification is to describe a boat complete in all respects with awnings, upholstery, cooking utensils, china, plated ware, and glassware. Linen, blankets, navigating instruments, such as sextant, chronometer, etc., are not included.

General Dimensions:

Length, extreme 66 feet 0 inches
Length, waterline 65 feet 9 inches
Beam, extreme 13 feet 3 inches
Draft, about 4 feet 6 inches
Load displacement 44,000 pounds
Speed, deep load displacement 30 statute miles

Keel:

To be sound oak in long lengths, hook scarfed at all joints and bronze bolted, to have an inside keel 8 by 3½ inches rabbetted for the planking.

Skeg, or false keel, of oak, bronze bolted through-out.

Stem:

To be in two pieces of oak; the lower piece to be a natural knee; all to be sided. The stem beyond the rabbet to be sheathed with two plates of Tobin bronze ¾ inch thick, riveted together at the front and dressed to a sharp edge. Cast bronze shoe to extend from well under forefoot up and be incorporated between these plates.

Stern Post:

Of natural oak or chestnut crook; sides molded.

Transom:

Of oak, 1½ inches thick, steam bent to shape, stiffened on the inside by vertical oak stiffeners 1½ by 3½ inches spaced 8 inches apart. Seams reinforced with cedar seam battens.

Framing:

To be steam bent, of light and heavy system. Frames, 1¼ by 1¼, to be spaced 9 inches. Centers of Connecticut white oak, continuous from keel to deck; every third frame to be constructed by bending an inside frame over the clamps, stringers, etc., the space between frames to be packed solid with spruce filling pieces, all through riveted. The double or heavy frames are designed to give structural strength; the intermediate, or light frames, local stiffness.

Floors:

Of oak on edge at every frame.

Chine:

To be in two lengths, each side, of oak wrought from material 5 by 3½ inches. Scarf to be reinforced with a doubling piece of oak or bronze and through fastened.

Sheerstrake:

In conjunction with the chine, to form the upper and lower members of the girder, of which the sides represent the web. This sheerstrake is to be of yellow pine in long lengths with doubling pieces at the scarfs; to be molded out of lumber 3 by 8 inches.

Planking:

Above waterline, sides to be double thick as follows: An inside skin of ¾-inch white cedar and an outer skin of ¾-inch long-leaf Georgia pine with a heavy layer of paint between. Between the frames the inner skin to be secured to the outer with No. 8 24-inch brass wood screws, driven from the inside, with copper burrs under the heads. A double line of these screws, four to a frame space, on each side of seam of inner plank; the edges of the outer plank to be secured by similar screws, two to a frame space. The object of this construction is to absorb all longitudinal shear when the boat tends to sag or hog in a seaway, by preventing movement between the plank edges.

Bottom planking of a single thickness of yellow pine finished 1½ inches thick; over the seams and fitted intercostally between the frames, cedar seam battens 1½ by ¾ inches and secured to planking with six round-head ¾ inch No. 8 brass screws with washers under the heads over all seams, making in effect a double-planked bottom with none of its tendency to become water-logged. Planking to be secured in place by copper rivets over burrs, or brass screws where through fastening is not feasible. All joints of outside plank will be reinforced by hardwood butt blocks through riveted. Heads of all fastenings countersunk and covered with wood plugs set in paint.

Planking to be planed, sandpapered, and caulked with cotton, and to be absolutely fair and smooth before applying priming coats of paint.

Clamps and Stringers:

To be in long lengths of yellow pine, hook scarfed and through riveted at joints. Care to be exercised to get a good shift in butts and to see that butts on the two sides of the boat are not symmetrical.

Main Deck Beams:

Of oak and chestnut alternately; sawn from the natural crook. Average size of beams, 1½ inches siding, 3 to 3½ inches molding. Beams spaced 12 inches center to center.

Bulkheads:

To be five in number, water-tight and of double construction of two thicknesses of ¾-inch tongue and groove spruce laid diagonally with No. 8 cotton duck laid in paint between. The two thicknesses of bulkhead to be copper riveted together. Solid sawn frames 1 by 2 inches at bulkheads and bolted to same.

All openings for pipes, exhaust, shafts, etc., to be made water-tight where they pierce the bulkhead.

Stiffeners as may be necessary on all bulkheads.

Gun Platform:

To have a filling piece under the mount—of oak—for leveling purposes. Beneath the deck the space under the mount between the beams to be filled in solid with about 3-inch chestnut. A steel plate 4 by ¾ inches conforming to the ring or gun mount base in shape to be fitted underneath to take the holding down bolts.

In the engine-room a 2-inch iron gas pipe stanchion to be under the after end of the gun. The gun is

mounted directly over a double-thickness bulkhead; on the forward side of the bulkhead, to be well bolted to the deck foundation and to the keel, a ¾ by 16-inch tension plate—to absorb the lift of the gun—to be fitted. Especial care to be taken to distribute these supports over considerable area of the keel.

Decks:

Main deck and raised deck are to be constructed of two thicknesses of ¾-inch spruce or cedar laid diagonally, painted between, and covered with No. 6 cotton duck, in wide widths laid in thick paint.

The two thicknesses of decking to be secured together with closely spaced galvanized clout nails clinched.

Breast Hooks, Etc.:

At both the forward and the after end of the clamps, stringers and chines, hackmatack knees to efficiently connect these members to the frame or to each other.

Planksheer and Rail:

Of mahogany planked on top of the canvas, brass screwed in place and leveled to form a landing for the stanchions.

Engine Beds:

Of oak; engine logs 6 by 3 inches under the engines and extending the entire length of engine and tank space. Bed logs to have a steel tension strap 3 by ¾ inches bolted the entire length on under side.

Cross floors of oak. All engine bed fastenings to be screw bolted wherever possible, using bronze where in contact with the salt water. In engine and tank space alternate frames extra deep.

Extending from forward of amidships where the sides of the boat are not materially narrower than the deck a yellow pine fender about 2½ by 2½ inches faced with a strap of oval galvanized iron extending around the corner of the transom.

Hull Metal:

Rudder of the balanced type to consist of a manganese bronze casting, smooth ground and polished below the water; it is to have a 2-inch diameter Tobin bronze stock keyed and clamped in place. Stock extension to act as the lower pintle; proper web on rudder to deflect spray downward; blade about 1-inch thick at the waterline. Extra heavy strap bearings attached to hull by through bolts.

Struts of manganese bronze, of the single arm type set as nearly as possible in the wake of the stress lines; to have a removable rabbitted bronze bushing to facilitate repairs. Provision to be made for lubricating this bearing from the lazarette.

Stern bearings and stuffing boxes, of the universal ball joint type, bolted in place on the inside of the boat; lead sleeve where hull is cut for shaft hole.

Where shaft protrudes through the water-tight bulkhead, lubricated bronze stuffing boxes are to be fitted. A chocks, cleats, flagpole sockets, and deck fittings of bronze, neat design and through bolted where possible.

Heavy bronze stemband, covering the sides of the stem for a distance back on an average of six inches as before described.

Steering gear to be of flexible phosphor bronze tiller rope, ¾-inch diameter, over 6-inch diameter sheaves. Quadrant of manganese bronze with an emergency tiller of galvanized wrought iron.

Steering wheel of mahogany and with brass cheeks and hubs, 32-inch diameter, supported by a mahogany steering stand on which is placed the binnacle. Gear to be all bronze with a large bronze sprocket and chain gear hooking on to bronze lines. The bronze turnbuckles in steering line under deck in the lazarette.

Quadrant located under deck for accessibility with lines carried through special sheaves under the deck. Tiller lines to be carried all through after quarters and tank space in "glass" lined glavduct ¾-inch pipes with bronze ferrules at the ends.

Air ports of brass with plate glass lights about ¾ or ¾-inch thick. Lights on deck-house to be 9 inches in diameter clear opening and to have two clamping lugs; in stateroom forward lights are to have a clear opening of 7 inches, gradually diminishing in size to 5 inches in crew's toilet. All ports to be polished, well finished, water-tight, being set up on rubber gaskets and to be put in from the inside of the boat with a long sleeve extending through the house or plating and a light fitting finishing ring screwed in place on the outside.

Ventilators of copper, hammered to shape, of indicated size; ventilators will screw into brass deck plates which are to have screw covers for use when ventilators are removed.

Two 16-inch clear opening brass manhole plates with mahogany wood centers to lazarette.

Galvanized malleable rail stanchions about 28 to 30 inches high with galvanized wire rope upper and middle rails. Rail stanchions to be bolted to deck wherever possible, braced at openings and to have proper turnbuckles, release hooks at gangway, etc. Single rail stanchions for life-lines to protect the walk in the raised deck.

Forward a bronze Eno or equal windlass to be furnished, through bolted to solid oak sole piece under the beams.

Crew's ladder of iron, sides 1½ by ¾ inches with half round ¾-inch diameter rungs, flat side up. Ladder to engine-room of wood, ash, or iron as preferred.

A military mast located aft of after deck-house; of spruce, and rigged with an electric range light at top, a yard for wireless aerials and a yard for signal halyard; mast stepped through to keel and with wire rope stays and ¾-inch bronze turnbuckles. A standard with platform for an arc searchlight to be built up on top of the conning tower to take the forward end of the aerials; in this assembly the forward white running light is to be carried.

On the mast an incandescent searchlight is to be mounted.

Conning Tower:

Or windbrake, substantially constructed of elliptical section forward and built up of three thicknesses of wood; an inner and an outer sheathing of vertical mahogany with a steam bent horizontal inner layer of cedar; the whole to be through riveted with copper or secured with brass screws. A layer of No. 13

duck is to be laid between the inner and outer skins and is to be all well bedded in thick paint.

Five polished plate glass fixed lights about 1/2-inch thick, 12-inch diameter, with brass frames.

In front a panel about 36 inches wide with the center lights to hinge up for ventilation as may be required.

Special bronze hinge, stays, and catch to be provided. Roof of house 1/2-inch tongue and groove spruce, canvas covered, on mahogany beams well braced underneath and with partners to take weight and racking due to position of the searchlight's platform.

Anchor:

Of extra heavy khaki-colored duck, roped on edges and with proper grommets, etc., to be supplied; it is to be secured to roof of tower and supported by 3/4-inch galvanized gas pipe stanchions with composition heads and heels, spruce stretchers, ridgepole braces and wire rope to insure a steady and secure job.

Engine Controls:

Two bronze levers each side of helmsman, two to operate reverse clutch proper and two to control the positive locking gear. Removable bronze levers to be supplied fitting in sockets at the deck. Fulcrum to be practically at deck at which point a water-tight housing will cover the various positions of the levers. Ball crank with direct lead, to 8-inch levers that are to be put on the reverse gear, of galvanized pipe with proper end yokes, sockets, etc.

Anchor:

One galvanized kedge anchor of 150-pound weight to be supplied and one of 75-pound. These are to have proper davits, one on each side to properly cat the anchors.

Davits to be 2-inch and 1 1/2-inch diameter, respectively, and to set into galvanized pipe sockets. Extra long falls with lignum vitae blocks, patented brass sheaves with all proper gears for swinging anchor from its hauled-in to its catting position.

Sixty fathoms 1 1/4-inch diameter and 40 fathoms 3/4-inch diameter manila (four-strand), bolt rope to be supplied for anchor cables. Chain will be supplied as an alternative, but boats of this size ride more easily to the spring of a rope; the rope can be over-hauled more rapidly, and it makes less weight in the bow, which is most advantageous for the high speed required. Its only drawback is the necessity of proper drying and ventilation when stowed to prevent undue deterioration.

Two 100-foot lengths 5/8-inch diameter manila bolt rope to be supplied, one end whipped, and the other eye-spliced for deck lines.

A 100-foot heaving line is to be supplied. Two locust bits 5 by 6 inches on after deck. These bits to step in long steps and to have galvanized iron strap under deck in the form of a couple to encircle the bits and carried forward to distribute strain over five beams.

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sleeves, gas tight from deck to tank; this construction minimizes crystallization of tank top at the filler due to vibration. Vents with shuttles carried out on deck at convenient and protected positions. Filler opening to be provided with removable 100-mesh brass wire gauze strainers to strain gas as it is poured in tank.

Fresh Water Tank:

One hundred gallons of fresh water to be carried in one or two galvanized No. 16 U. S. standard gauge steel tanks; these tanks galvanized after making and to be arranged to fill from deck; to have proper shut-off, vent and outlet and to be tested to 8-foot head of water.

Lubricating Oil Tanks:

Two galvanized tanks, each of 40 gallons capacity, to be arranged in engine-room. Each tank will have two compartments to act as reserves for each engine.

Plumbing:

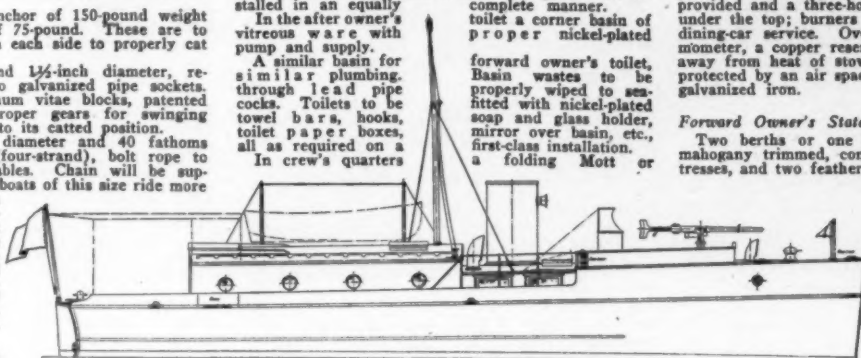
In forward and aft owner's toilet rooms, a Mott or equal Duplex-Richmond closet, mahogany seat and cover, to be installed; to have proper seacocks with strainer and scoops on the supply and lead pipe connections using pipe with properly wiped joints.

In the crew's quarters a Mott or equal to be installed in an equally complete manner.

In the after owner's vitreous ware with pump and supply.

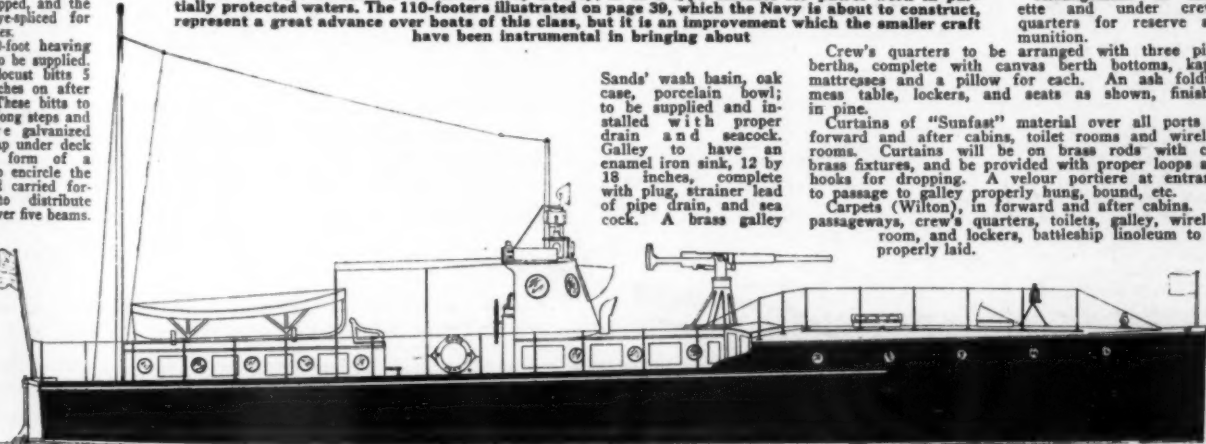
A similar basin for similar plumbing, through lead pipe cocks. Toilets to be towel bars, hooks, toilet paper boxes, all as required on a In crew's quarters

forward owner's toilet, Basin wastes to be properly wiped to sea-fitted with nickel-plated soap and glass holder, mirror over basin, etc., first-class installation, a folding Mott or



The 45-footer, built for the Government by Lawley, is of a type suitable for patrol work in partially protected waters. The 110-footers illustrated on page 39, which the Navy is about to construct, represent a great advance over boats of this class, but it is an improvement which the smaller craft have been instrumental in bringing about

Sands' wash basin, oak case, porcelain bowl; to be supplied and installed with proper drain and seacock. Galley to have an enamel iron sink, 12 by 18 inches, complete with plug, strainer lead of pipe drain, and seacock. A brass galley



The 66-footer, which the Luders Company has built for the Government, is specifically a dual purpose boat—a cruiser that is adapted to the uses of peace or of war. While eminently satisfactory for the purpose intended, it is hardly necessary to say that craft of this length will not fully meet the exigencies of continuous offshore service in submarine warfare

Bronze pin 3/4-inch diameter through head of bit. Brass weather cap on top.

Gasoline Tanks:
Four in number, all of 48-ounce copper. The three amidship tanks are to have a unit capacity of 500 gallons and there will be an after tank of 330 gallons, or 1,830 gallons total. A service tank in engine-room is to have a capacity of twenty-five gallons.

The four main tanks are to be set in individual 20-ounce copper pans 12 inches deep; all to have drains of lead pipe to the sea with seacocks at the vessel's skin. Proper deflecting scoops on the outside to prevent filling of pans with sea water when under way.

Main tanks to be divided into compartments about 16-inch width, depth and length by 28-ounce copper swash plates well riveted and soldered in position. Tank edge, seams, etc., to be most thoroughly riveted and soldered and tested for eight hours with an air pressure of three pounds, approximately double the hydrostatic head possible in the tanks; the tanks to be well braced in position with wood supports to rest as frequently as possible against unstayed portions of tank. Through bolts to the bulkheads between or at side of tanks through wood stiffeners on tank fronts to prevent possible fore and aft movement.

Each tank to have two 3/4-inch I. P. S. outlets with valves and accessible operating controls. The main gasoline feeder to consist of two copper tubes 1/2-inch I. P. S. leading to the gasoline pump, reduced at the pump to suit section.

The after tanks to be connected to main feeder by two inside copper tubes 3/4-inch I. P. S. carried inside the boats. All joints to be made up of tinned brass fittings screwed and sweated in place. Pipes of any length to have expansion loops.

The foregoing description describes a double feed, one for each engine with arrangements for using one line for both engines in the event of damage to the other supply pipe.

Tanks to be filled from deck with flexible lead

pump like Sands' S-720 2-inch cylinder to be supplied. Supply pipes to be of tin lined brass pipe, tinned fittings with proper arrangements to absorb vibration to prevent damage to joints.

Ice-box to be made up of an inner and an outer lining of pipe with heavy corner posts. Insulation to consist of the outside sheathing, a layer of rosin paper, two layers of 1-inch cork board with joints broken, paper between, another layer of paper, the inside lining in the upper, or ice compartment, to be of galvanized iron with pan and drain outboard through seacock. Ash slats, removable, to be supplied to keep ice from the walls and bottom of pan. Circulation to be provided by a space two inches wide each side of pan.

The lower compartment to be lined in enamel iron, nickel-plated corner pieces and trimming, and enameled wire food trays.

Cabins:

After cabin and extension of forward cabin over the engine-room to be built up of 1 1/4-inch solid mahogany, stiles and rails to be tenoned together, set in paint, and locked with brass screws. The house side to have alternate wood panels, and 9-inch diameter polished brass air ports. If desired, 3/4-inch plate glass fixed lights to be substituted for the panels.

Interior bulkheads of 3/4-inch thick white pine, except where mahogany is indicated, neatly paneled.

All doors 1 1/4-inch thick; panels in lockers of lattice work, wooden strips, for lightness and ventilation.

After Cabin:

To have a drop door with mahogany slide on brass runs over; all companion slides and hatches double thick with muelin laid in paint between the two thicknesses to insure water-tightness.

An L-shaped settee with an extension side to pull out and form berth; settee to have a spring and hair upholstered cushion 7" thick, tufted or plain of silk velour, with hair-filled upholstered back. Back to

pivot and provide access to bedding storage behind. When settee is extended the cushion is pulled forward, the parts usually concealed behind the back permitting the proper width of bed to be obtained without resorting to loose pieces of upholstery.

To port, a Pullman berth to be fitted to have substantial hinges or pivots, latches, and other hardware. To have a spring mattress and two first-class hair-filled pillows. Strap to be provided to secure berth in proper position, and also to hold bedding in place when berth is closed.

A mahogany buffet, with locker, glass rack, and felt-lined drawers for silverware.

Mahogany locker, stairs as shown. All trim to be of mahogany.

Room in general panel in pine, finished in white, with mahogany beams, 2 1/2" x 1 1/4".

Cabin roof of 3/4" spruce V-jointed tongue and groove with No. 10 duck. A neat molding underneath at beams.

Passageway panel in pine.

Wireless room, or equivalent space, to dimensions specified, paneled in pine, and arranged for the wireless outfit that is to be supplied by the Government.

Toilet room paneled in pine with linen locker under the deck.

Galley to be trimmed in ash and finished in paneled pine. Dresser top of ash. Stove platform to be provided and a three-hole alcohol stove with an oven under the top; burners similar to those furnished for dining-car service. Oven to be provided with thermometer, a copper reservoir for alcohol installed well away from heat of stove. Space around stove to be protected by an air space, asbestos and neatly finished galvanized iron.

Forward Owner's Stateroom:

Two berths or one berth and a settee of pine, mahogany trimmed, complete with springs, hair mattresses, and two feather pillows for each.

Sides of room paneled in pine fixed in around ports with proper drain for drip from ports. Storage space under berths and seats.

Mahogany bureau with proper drawers.

An ammunition locker at foot of companionway convenient to gun; size 72" x 27" x 16"; estimated to hold 200 rounds for a 3-pounder.

Arrangement in lazarette and under crew's quarters for reserve ammunition.

Crew's quarters to be arranged with three pipe-berths, complete with canvas berth bottoms, kapoc mattresses and a pillow for each. An ash folding mess table, lockers, and seats as shown, finished in pine.

Curtains of "Sunfast" material over all ports in forward and after cabins, toilet rooms and wireless rooms. Curtains will be on brass rods with cast brass fixtures, and be provided with proper loops and hooks for dropping. A velour portiere at entrance to passage to galley properly hung, bound, etc.

Carpets (Wilton), in forward and after cabins. In passageways, crew's quarters, galley, wireless room, and lockers, battleship linoleum to be properly laid.

Cushion, khaki kapoc-filled, on mahogany observation deck seat.

Electric Plans:

An independent 5 x. w. 120-volt Smile single-cylinder generating set to be installed in engine-room. Set to have an auxiliary bilge pump.

In cabins neat old brass finish wall fixtures, with key switch, brass husk and wall plate, Edison base to be supplied, as follows:

After stateroom.....5 fixtures
Toilet, aft1 fixture
Wireless2 fixtures
Forward staterooms.....4 fixtures
A plain fixture without husks, as follows:

Galley
Engine-room
Forecastle
Guarded lamp as follows:
Lazarette2 fixtures
Chain locker.....1 fixture

Two portable lamps for engine-room with 12' cord. All running and side lights to be both electric and oil burning.

Lighting system on boat to be 24 volts pressure. Two sets of 80 ampere hour Exide or equal storage batteries for starting the motors and supplying current for the electric lights.

A marble switchboard, properly fused, back connected with underload circuit breaker, pilot light, ammeter, and voltmeter, arranged as follows:

To take current from independent generator for the radio set: to charge the storage batteries in series from generator using the necessary resistance; to run arc searchlight direct: this permits use of arc searchlight and radio set at the same time. In addition, the self-starter generators on the motors charge the batteries in the usual manner when running.

A 9" searchlight 110 volts, 5 to 6 amperes, mirror reflectors of Carlisle-Finch or General Electric make to

(Continued on page 58)

MOTOR BOATING ADVERTISING INDEX

A		G		N	
Aerotherm Engine Co.	57	Gardner & Co., Wm.	48	National Marine Lamp Co.	70
Albany Boat Corp.	84	Gas Engine & Power Co., and Chas. L. Seabury Co., Consolidated	61	Naval Architects & Yacht Brokers	58
Alden, John G.	58	General Elec. Co.	93	Navy Gear Co.	63
American Manganese Bronze Co.	74	General Aeroplane Co.	87	Nelson Blower & Furnace Co.	59
American Screw Propeller Co.	62	Gene V Boat Co.	75	New York Yacht, Launch & Engine Co.	74
Anderson Engine Co.	62	Germain Boat Co.	66	Niagara Motor Boat Co.	96
Arrow Motor & Machine Co.	62	Gielow & Orr.	47	Niagara Motors Corp.	99
Athol Mfg. Co.	62	Gies Gear Co.	58	Nock, Frederick S.	58
Automatic Bilge Bailer Co.	58	Gray-Hawley Mfg. Co.	62	Norma Co. of America, The	80
Automatic Machine Co., The	123	Gray, Henry	78	Northwestern Motor Co.	72
B		H		P	
Baldrige Gear Co.	70	Hacker, John L.	57	Paragon Gear Works	101
Belle Isle Boat & Engine Co.	89	Hall Co., W. S.	85	Para Rubber Products Co.	117
Betsy Ross Flag Co.	69	Hall, Wilford, Laboratories	77	Peerless Marine Motor Co.	116
Billings-Chapin Co.	62	Hand, Jr., Wm. H.	58, 73	Pneumercator Co., Inc.	107
Boston Varnish Co.	94	Harmon Co., Clifford B.	62	Porcelain Products Co.	69
Bowes & Mower	58	Heinze Electric Co.	68	Prest-O-Lite Co.	69
Bridgeport Motor Co.	66	Henricks Magneto & Elec. Co.	71	Purdy Boat Co.	91
Brooklyn Varnish Co.	90	Hyde Boat & Eng. Co.	62	Pyrene Mfg. Co.	86
Brooks Mfg. Co.	62	Hyde Windlass Co.	127	R	
Bruns Kimball & Co., Inc.	58, 90	I		Racine Boat Co. (Racine)	71
Bryant & Berry Propeller Co.	77	Ingram Hatch Motor Corp.	58	Rajah Auto Supply Co.	76
Buffalo Gasoline Motor Co.	1	International Silver Co.	58	Red Wing Motor Co.	92
Buffalo Specialty Co.	119	J		Regal Gasoline Engine Co.	66
Burger Boat Co.	62	Jennings Co., H. H.	49	Richardson Boat Co.	78
Byrne, Kingston & Co.	86	Johns-Manville Co., H. W.	122	Roberts Motor Mfg. Co., The	102
C		Johnson & Son, S. C.	121	S	
Caille Perfection Motor Co.	4	Jones, Frank Bowne	50	S-R Mfg. Co.	68
Calman Co., Emil	109	Jones, S. M. Co., The	57	Sands & Sons Co., A. B.	110
Campbell Co., A. S.	69	Joymotor Mfg. Co.	77	Sanford, Harry W.	52, 58
Cape Cod Power Dory Co.	76	K		Scripps Motor Co.	100, 101
Carleton Co., The	62	Kahlenberg Bros. Co.	71	Seaman, Stanley M.	45
Carlisle & Finch Co.	78	Kainer Mfg. Co.	80	Sherman, E. M.	58
Carlyle Johnson Machine Co., The	2	Kemp Machine Works	98	Smalley General Co.	58
Carpenter & Co., Geo. B.	108	Kennedy Machine Co.	62	Smith & Co., Edw.	97
Champion Spark Plug Co.	112	Kermath Mfg. Co.	134	Smith Serrell Co., Inc.	91
Chelsea Clock Co.	68	Keystone Varnish Mfg. Co.	88	Snow & Petrelli Mfg. Co.	132
Classified Advertisements	55, 56, 57	Koban Mfg. Co.	97	Southern Yacht Agency	51
Columbian Brass Foundry	67, 125	Kroh Mfg. Co.	78	Standard Aero Corp.	93
Continental Aircraft Co.	79, 80	L		Standard Co., The	130
Cox & Stevens	44, 54, 58	Lacy Marine Motor Co.	62	Standard Motor Construction Co.	2nd Cover
Crockett Co., The David B.	92	Lambert Pharmacal Co.	76	Standard Oil Co.	66
Cullen Motor Co.	73	Langstadt & Meyer Co.	82	Standard Oil Engine Co.	66
Cummins, C. L.	70	Leece-Neville Co., The	69	Stanley Co., The	66
Curtiss Aeroplane Co., The	93	Life Preserver Suit Co.	115	Stanton, B. T.	57
Curtiss Co., J. H.	88	Lipman Mfg. Co.	62	Stearns-McKay Co.	72, 79
Cutting & Washington Co.	129	Lobee Pump & Machine Co.	70	Sterling Engine Co.	3rd Cover
D		Lockwood-Ash Motor Co.	89	T	
Deed, Jr., W. J.	58	Lord, Frederick K.	58	Tama, Lemoine & Crane	46
Defoe Boat & Motor Works	82	Luders Marine Construction Co.	74	Texas Co.	131
De Forest Radio Telephone & Telegraph Co.	62	Lunkenheimer Co., The	71	Thermex Silencer Works	62
Detroit Lubricator Co.	72	M		Thompson Bros. Boat Mfg. Co.	68
Devos, F. W. & C. T. Reynolds Co.	113	McClellan, C. P.	66	Toppam Boat Mfg. Co.	81
Doman Co., H. C.	68	McFarlan & Spilker Mfg. Co.	68	Trimount Rotary Power Co.	56
Draeger Oxygen Co.	65	McQuay-Norris Mfg. Co.	95	U	
Driggs Ordnance Corp.	106	Manzel Bros. Co.	75	Universal Motor Boat Supply Co.	73
Duesenberg Motor Corp.	3	Marine Compass Co.	62	Universal Motor Co.	96
Du Pont Fabrikoid Co.	80	Marine Equipment & Supply Co.	69	Universal Safety Mattress Co., Inc.	62
Durkee & Co., Inc., C. D.	84	Masten Co., G. H.	78	Upson-Walton Co., The	62
E		Mathis Yacht Building Co.	87	V	
Egyptian Deities	61	Matthews Co.	81	Valentine & Co.	40
Elbridge Engine Co.	83	Meisel Press Mfg. Co.	66	Valley Boat Co.	76
Elco Co.	2nd Cover	Michigan Standard Gear Co.	74	Van Blerck Motor Co.	4th Cover
Ericson Mfg. Co.	126	Michigan Wheel Co.	73	Viper Co., Ltd.	98
Evinrude Motor Co.	85	Miller Gas & Vacuum Eng. Co.	111	W	
Excelsior Propeller Co.	70	Millis, R. S.	66	Water Craft Co.	66
F		Missouri Engine Co.	70	Watkins Motor Co., The	66
Farley Co., Edw. P.	53	Motor Boat Hardware Co.	62	Watts, J. Murray	58
Fay & Bowen Engine Co.	133	Motor Boat Supply Co.	70	Weston Electrical Inst. Co.	68
Ferdinand & Co., L. W.	82	Mullins Co., W. H.	83	Whiting (J. L.)-Adams (J. J.) Co.	58
Ferro Machine & Foundry Co.	104	Murphy Varnish Co.	95	Wicker-Kraft Co.	77
Flying	94	Murray & Tregurtha Co.	75	Wilcox, Crittenden & Co., Inc.	68, 70, 75, 79
Fort Hill Laboratory	66	N		Willis Co., E. J.	60
Frishie Motor Co., Inc.	124	O		Winton Engine Works	114

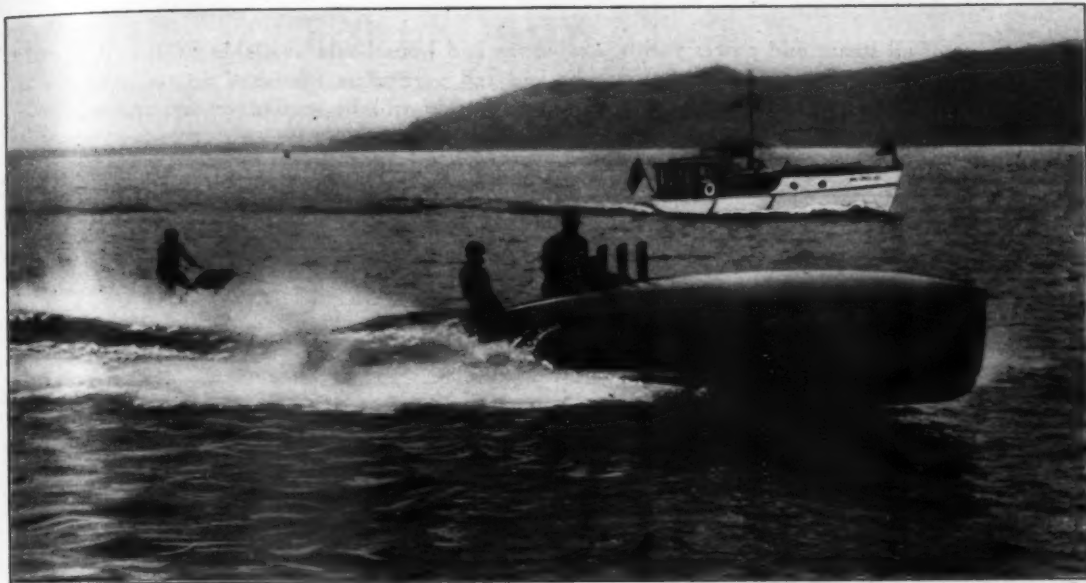


Photo by Woodfield

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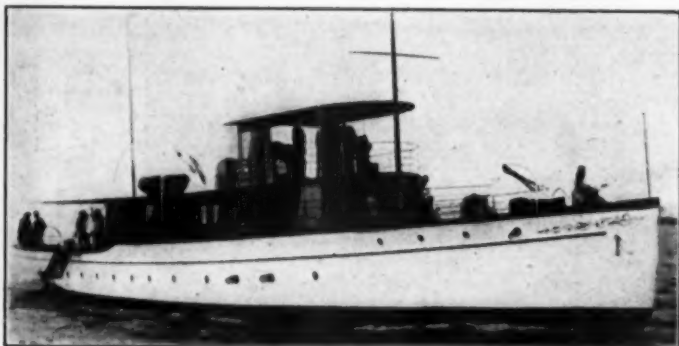
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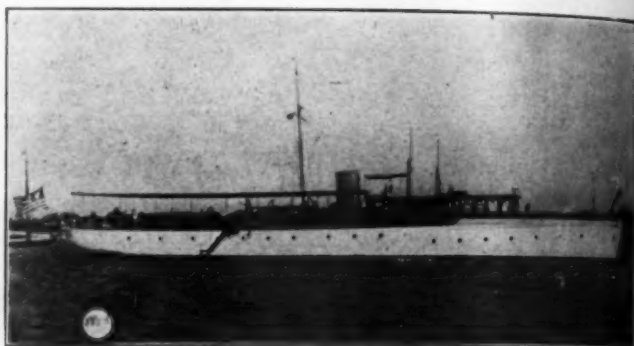
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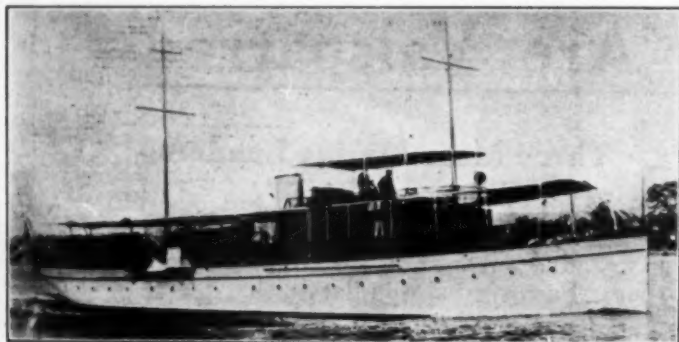
We have a complete list of all steam and power yachts, auxiliaries and houseboats available FOR SALE and CHARTER. A few are shown on this page. Plans, photographs and full particulars furnished on request. Catalogue illustrating types and sizes of yachts we have for sale will be mailed on application.



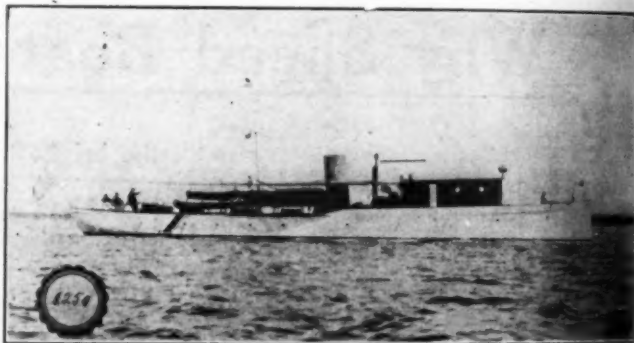
No. 2029—For Sale—110 ft. steel cruising power yacht; speed up to 17 miles. Large accommodation; dining saloon and social hall on deck; six staterooms, two bathrooms, etc., aft. Large cruising radius. Cox & Stevens, 15 William Street, New York.



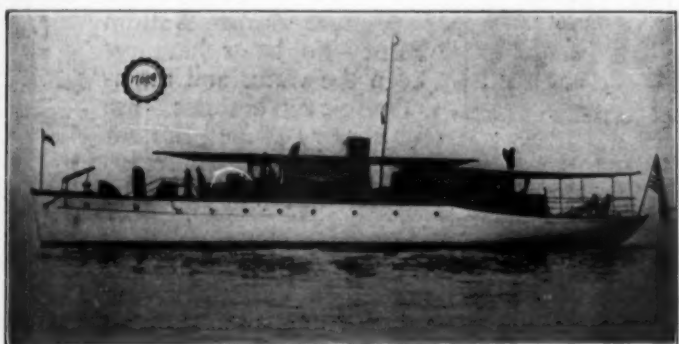
No. 885—For Sale or Charter—Handsome fast 120-ft. twin screw, steel power yacht. Speed up to 18 miles. Large dining saloon on deck, three double staterooms, main saloon, two bathrooms, etc. Price attractive. Cox & Stevens, 15 William Street, New York.



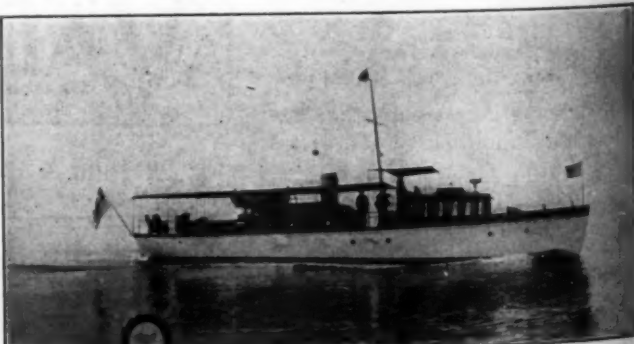
No. 1796—For Sale or Charter—Very roomy, twin-screw cruising power yacht, 99 x 17 x 4 ft. Speed 13-15 miles; Standard motors. Large dining saloon, six staterooms, three bathrooms; all conveniences. Cox & Stevens, 15 William Street, New York.



No. 1250—For Sale or Charter—112 ft. twin screw cruising power yacht (new hull after deckhouse). Speed, 14-16 miles. Large accommodations; dining saloon on deck forward; social hall in after deckhouse; four staterooms, etc. All conveniences. Cox & Stevens, 15 William St., New York.



No. 1702—For Sale or Charter—Fast twin screw cruising power yacht; 90 x 16.6 x 4.6 ft. Speed up to 16 miles. Large deck dining saloon, four staterooms; all conveniences. Cox & Stevens, 15 William Street, New York.



No. 1828—For Sale or Charter—Attractive power yacht; 75 x 13 x 3.6 ft. Speed 11-12 miles; Standard motor. Dining saloon, two double and one single stateroom, bath, two toilets; all conveniences. Cox & Stevens, 15 William Street, New York.



No. 3405—Exceptional Bargain—Attractive twin screw power yacht; 71 x 14 x 3.8 ft. Speed 11-13 miles. Forward and after saloons, two staterooms, two toilet rooms, separate galley, etc. Cox & Stevens, 15 William Street, New York.



No. 3250—For Sale—High speed twin screw cruiser; 54 x 10.6 x 3 ft. Speed up to 32 miles; Van Blerck motors. Two cabins, toilet room, galley, etc. Price low. Cox & Stevens, 15 William Street, New York.



No. 1026—For Sale—Modern bridge deck cruiser; 13 x 10.3 x 3.4 ft. Speed, 10 miles; 24-30 H.P. 20th Century motor. Double stateroom, saloon, separate galley, etc. Price low. Cox & Stevens, 15 William Street, New York.

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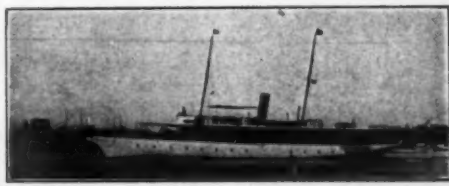
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The Yachts advertised below are some of the finest available and we can recommend everyone of them through personal observation. We have a very large list of the best craft for Sale and Charter which space prevents showing. Full particulars mailed immediately upon request.

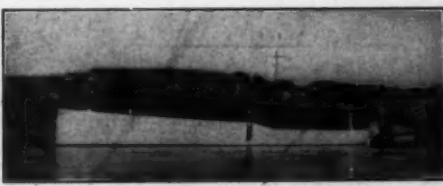
Our handsome Illustrated Yacht List sent free.



8344.—The only large steel oceangoing steam yacht available at low price. Stanley M. Seaman, 220 Broadway, New York City.



5233.—Estate desires immediate sale of this fine 115-ft. steam yacht, offering 4 staterooms, 2 baths. Very economically maintained. Bargain to quick buyer. Stanley M. Seaman, 220 Broadway, New York City.



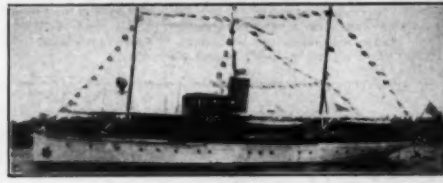
8378.—Twin-screw Lawley seagoing cruiser, 113 ft. o. a. Two deck houses, 5 staterooms and bath. Speed, 14 knots. Over \$10,000 spent in permanent improvements 1916. Fine opportunity for quick sale. Stanley M. Seaman, 220 Broadway, New York City.



7482.—Triple-screw steel seagoing cruiser. 110 ft. o. a. 6 staterooms, 2 baths. Every convenience. Speed, 16 miles. Stanley M. Seaman, 220 Broadway, New York City.



8422.—Brand new 95-ft. steel seagoing oil burning cruiser. Speed 14 miles per hour. Offer entertained. Stanley M. Seaman, 220 Broadway, New York City.



7920.—95-ft. offshore cruiser. Speed, 14 miles. Excellent sea boat. Stanley M. Seaman, 220 Broadway, New York City.



8105.—The best 80-ft. twin-screw cruiser of type for sale. Two large staterooms and bath. Speed, 13 miles. Good as new. Stanley M. Seaman, 220 Broadway, New York City.



8393.—For sale or charter: 75-ft. twin-screw coast cruiser. Exceptionally roomy quarters below. Fine deck space. Dining saloon and galley on deck. Attractive price. Stanley M. Seaman, 220 Broadway, New York City.



8549.—72-ft. twin-screw Matthews coast cruiser. Low price. Stanley M. Seaman, 220 Broadway, New York City.



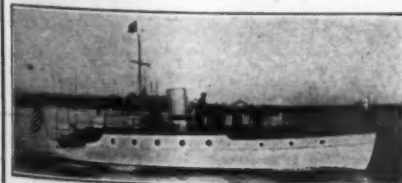
8612.—The latest Lawley 70-ft. seagoing cruiser. 3 staterooms and bath. 100 H.P. engine. Every convenience. Finest construction. Excellent opportunity for quick sale. Stanley M. Seaman, 220 Broadway, New York City.



8193.—Exceptionally high grade twin-screw 65-ft. coast cruiser. Deck dining saloon, 2 double staterooms. Speed, 12 miles. Elegant finish and equipment. Cost, \$25,000. Condition good as new. Low price. Stanley M. Seaman, 220 Broadway, New York City.



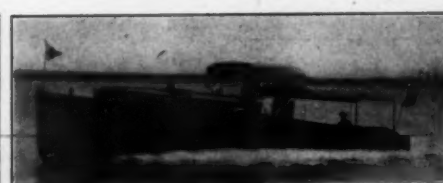
8620.—Brand new twin-screw patrol express cruiser. Speed, 25 miles. Offer considered. Stanley M. Seaman, 220 Broadway, New York City.



8133.—The best 55-foot coast cruiser available. Condition good as new. Low price for immediate sale. Stanley M. Seaman, 220 Broadway, New York City.



8409.—53-ft. twin-screw patrol express cruiser. Launched 1916. Speed, 30 miles. Fine accommodations. Stanley M. Seaman, 220 Broadway, New York City.



8622.—Brand new 44-ft. express cruiser with 100 H.P. Van Blerck engine. Speed, 27 miles. Cruising accommodations. Bargain for quick sale. Stanley M. Seaman, 220 Broadway, New York City.



8456.—High grade 48-ft. bridge deck cruiser. Stateroom, saloon. 75 H.P., 6-cylinder engine. Elegant sea boat. Immediate sale desired as owner is building larger boat. Stanley M. Seaman, 220 Broadway, New York City.



8617.—Seagoing 40-ft. cruiser. Stateroom. Condition good as new. Stanley M. Seaman, 220 Broadway, New York City.



8581.—36-ft. Luders cruiser. Fine accommodations. New engine. Condition perfect. Stanley M. Seaman, 220 Broadway, New York City.

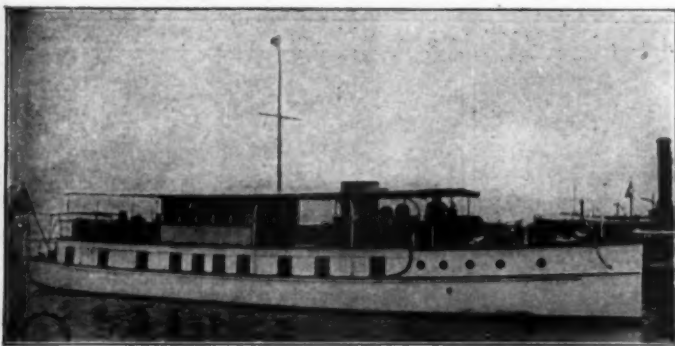
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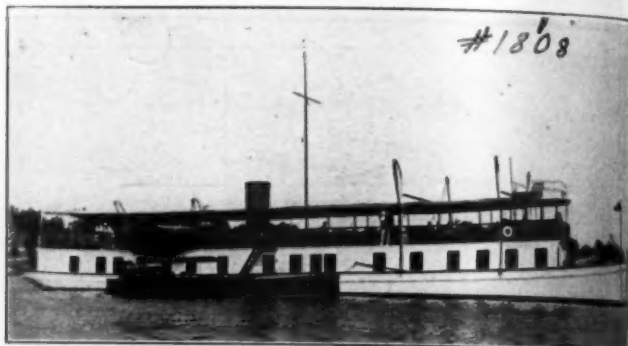
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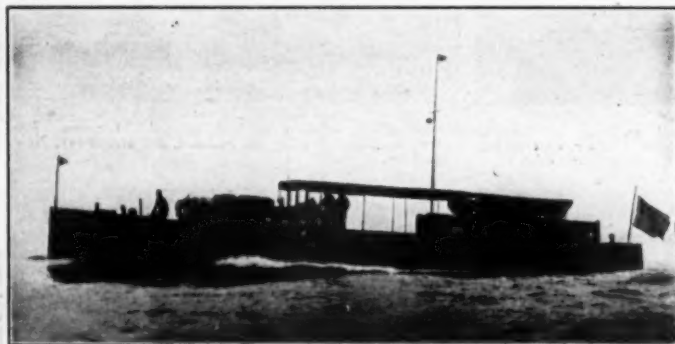
Offer for sale the following yachts, a number of which are available for charter



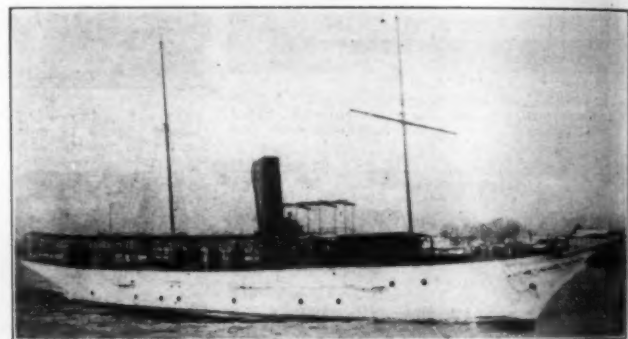
No. 1871—Sale—Charter—Modern motor houseboat. 95 ft. x 19 ft. x 3.3 draft. 4 staterooms, dining saloon, social hall, etc.



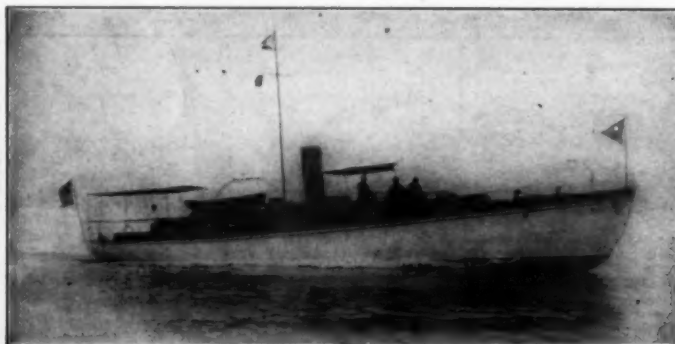
No. 1808—Sale—Charter—Twin Screw Houseboat, admirably suited for Southern waters, 125 ft. x 17 ft. 8 in. x 3 ft. 4 in. draft. 4 large staterooms, 2 bathrooms, saloon, etc.



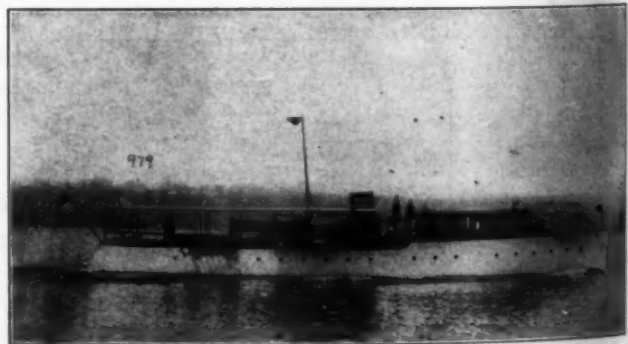
No. 7099—For Sale—Most desirable twin screw day cruiser available, 67 ft. 10 in. x 12 ft. x 3 ft. 9 in. draft. Designed by us; built 1911. Two 20th Century motors. Speed up to 14 miles. Very large cockpit.



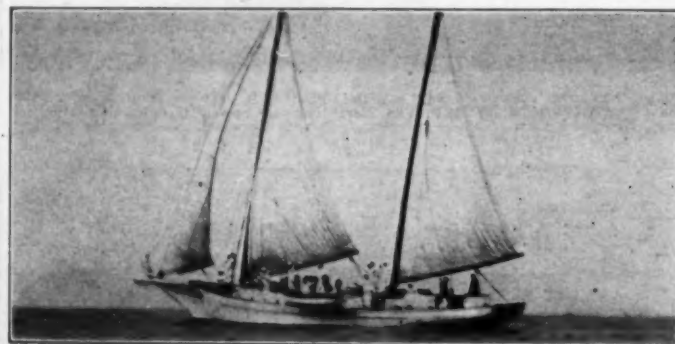
No. 7987—Sale—Charter—106 ft. cruising motor yacht; speed 13 knots; 4 staterooms, bathroom, main saloon, deck dining saloon, etc. Full equipment.



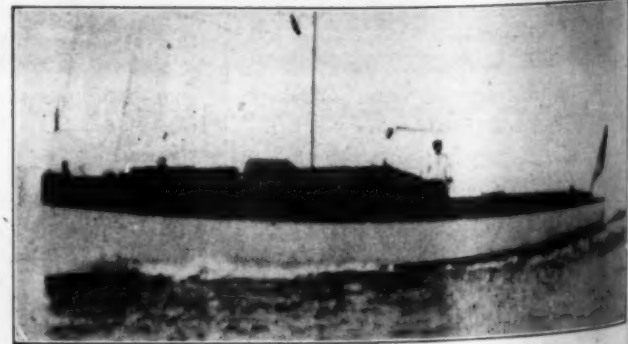
No. 7186—For Sale—Price attractive. Modern 90-foot fast cruising motor yacht, 300 H.P. Standard motor, speed up to 18 miles. Two single staterooms and two saloons. In excellent condition throughout.



No. 7996—For Charter—98 ft. desirable raised deck cruiser. Two 100 H.P. Standard motors; speed 14/16 miles. Three large staterooms, maid's room, two bathrooms and deck dining saloon, etc.



No. 1023—For Sale—Auxiliary ketch yacht, 82 ft. x 20 ft. 6 in. x 5 ft. 6 in. draught. 60 H.P. motor new 1916. 4 staterooms, bathroom, saloon, etc.



No. 7849—For Sale—At a reasonable price—Raised deck cruiser, 37 ft. x 8 ft. x 2 ft. 4 in. draft. 24 H.P. Standard motor. Excellent saloon, toilet room, and galley. Large cockpit; good seaboat. Has always had the best of care. Full particulars from Tams, Lemoine & Crane, 52 Pine Street, New York.

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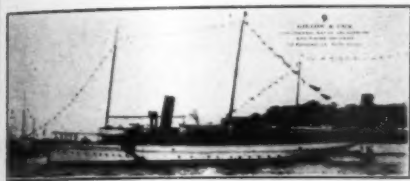
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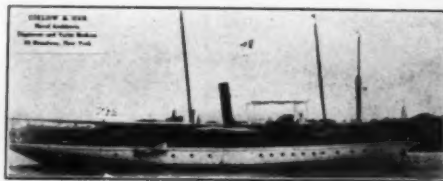
The most complete and up-to-date available information concerning nearly 5,000 yachts is obtainable at our office, and available for sale, charter, and exchange. We are therefore well qualified to put any prospective buyer or charterer in touch with the kind of craft that will appeal to him.

If you will tell us for what kind of boat you are seeking, we shall immediately submit interesting photographs and descriptions.

Our long experience as architects and engineers lends an added value to our brokerage service, in expert appraisal and advice, and estimates and supervision of alterations.



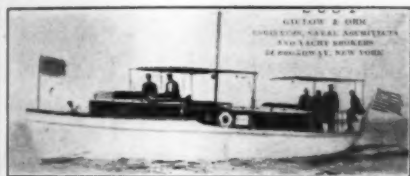
No. 9—Sale, Charter—152 ft. steam yacht. Good off shore or coastwise. Large accommodations.



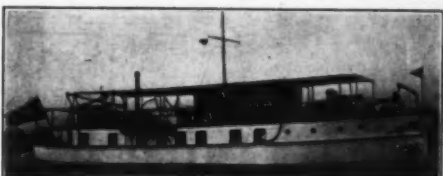
No. 718—For Sale by an Estate—124 ft. steam yacht. Very economical.



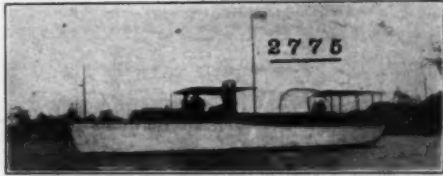
No. 1603—Sale, Charter—69 ft. flush auxiliary schooner.



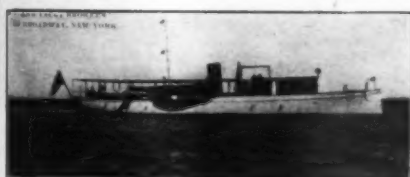
No. 2654—For Sale—Handsome, seaworthy 52 ft. cruiser.



No. 5559—For Sale—Modern 75 ft. twin screw power houseboat.



No. 2775—Sale, Charter—Able 60 ft. coastwise cruiser.



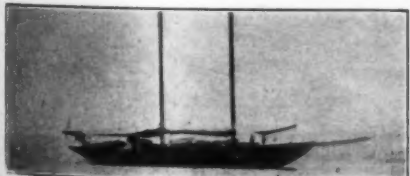
No. 2991—For Sale—112 ft. twin screw, motor yacht. Good speed.



No. 43—Sale, Charter—Able auxiliary schooner, 95 ft. overall. Fast under sail.



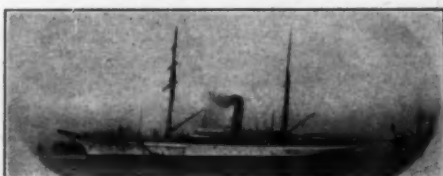
No. 5523—Sale, Charter—Handsome 66 foot motor yacht. Standard motor. Built 1916.



No. 2980—For Sale—Handsomely finished auxiliary schooner, 106 ft. Eight knots.



No. 3303—For Sale—Auxiliary centerboard ketch, 97 ft. overall, 5.6 ft. draught. Roomy.



No. 2625—Sale, Charter—275 ft. deep sea steam yacht. Heavily built. Ten staterooms.



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No. 3484—Sale, Charter—98 ft. twin screw motor yacht. Two deck houses.



No. 3710—For Charter—99 ft. twin screw motor yacht. Eight or more, owner's party.



No. 4996—For Sale—65 ft. twin screw cruiser. 13 miles. Large deck room.



No. 5403—For Sale—1915 power houseboat, 51 ft. Well worthy consideration.



No. 4091—For Sale—52 ft. cruiser. Stateroom, bath-room, main cabin.

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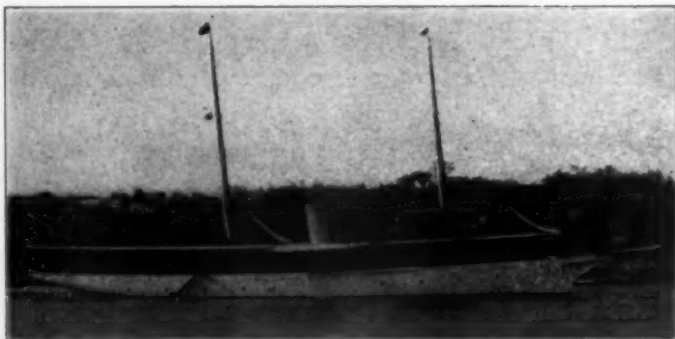
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3585 Rector

1 BROADWAY, NEW YORK

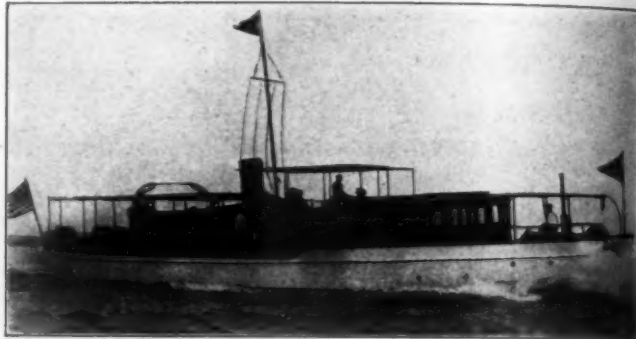
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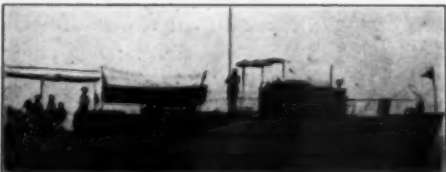
Plans, Photos and full particulars furnished on request



No. 326—Steam Yacht, 123 ft. long, 16.7 beam, speed 14 miles. Boat and equipment has had exceptional care. Inspection invited.



No. 956—Offered by Estate: Twin-screw Power Yacht, 78 x 12.6; two Murray & Tregurtha motors, practically in commission.



No. 1449—Raised Deck Cruiser, 62 x 11 x 3.6; two 20th Century motors, complete equipment.



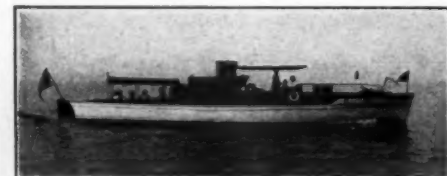
No. 1800—Handsome twin screw cruiser, 68 x 13.6. Standard motors, engine controls on deck. Splendid accommodation.



No. 2193—Power Yacht, destroyer type, 90 x 16.4; two Sterling motors, speed 12 knots. Built 1916.



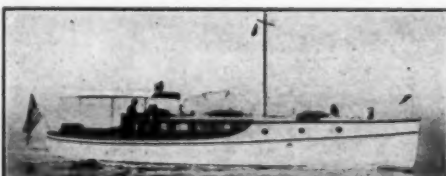
No. 1960—Desirable cruiser, 65 x 12; best condition; complete outfit; 60-80 H.P. motor; price reasonable.



No. 1625—Twin Screw 60 ft. motor, two new six-cylinder Sterling; speed 15 miles.



No. 1099—Twin Screw Cruiser, 66 x 12 x 2.6; two Speedway motors. Speed 12/14 miles.



No. 1898—Raised Deck Cruiser, 43 x 10, built 1912, heavy duty Sterling motor, first class condition.



No. 2068—High Speed 56 ft. Cruiser, 8-cylinder 150/180 H.P. Sterling engine, speed 20 miles.



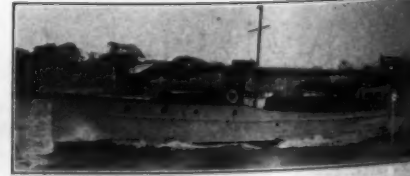
No. 1956—Desirable cruiser, 52 x 11.6. Twentieth Century motor, everything in good condition. Price reasonable.



No. 1499—Motor Boat, 40 x 8, Sterling motor, steering wheels and engine controls in cockpit and on bridge.



No. 173—Power Houseboat, twin screw, 66 x 16, five staterooms, dining saloon, etc. Apply William Gardner & Co., No. 1 Broadway, New York.



No. 2167—Modern 50 ft. Cruiser, six-cylinder Sterling motor. Cabin, two double staterooms, etc.

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Our list comprises all the available yachts for sale and charter. Below are a few of our offerings. If none of these appeal to you, write us your requirements. Our knowledge of the yachts we offer, and our 22 years' experience in the business, insure satisfaction to any one buying or chartering a yacht through this office.



1326—55' cruiser. Double stateroom and saloon sleep five. Speed 11 miles. Splendid proposition.



1003—45' cruiser. Double stateroom, two berths in saloon. Speed 10-11 miles.



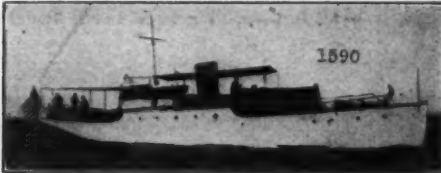
1355—45' cruiser. Double stateroom, two berths in saloon, berth in engine room, 32-37 H.P. Standard Motor. Speed 11 miles. Electric light, etc.



1857—35' cruiser, two berths in cabin and two in engine room. Speed 10 miles.



1672—48' cruiser, two berths in saloon, two berths in engine room, two toilets. Speed 10 miles.



1590—80' power yacht. Two double staterooms, dining saloon, bath, etc., 125 H.P. Winton Motor. Speed 13 1/4-15 miles.



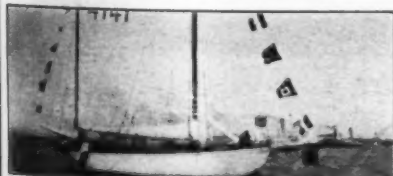
1093—Twin screw 90' power yacht. Three staterooms, dining saloon, main saloon, bath, etc. Speed 10-11 miles.



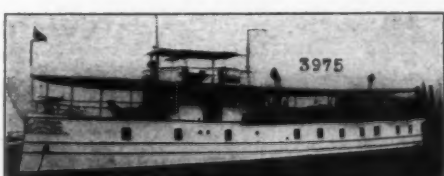
1658—30' cruiser. Four berths in cabin, toilet, etc. Speed 8 miles.



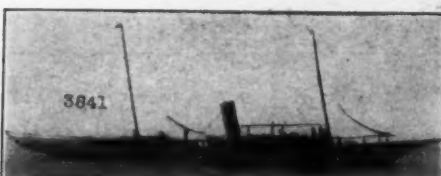
1819—Twin screw 65' cruiser. Two double staterooms, dining saloon, bath, etc. Speed 12 miles.



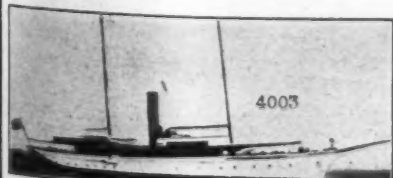
4141—95' auxiliary keel yawl. Three staterooms, two berths in saloon, two baths, 55 H.P. Sterling Motor. Speed 8 miles.



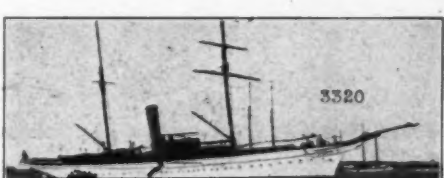
3975—115' steam Houseboat, four staterooms, dining saloon, music room. Four baths, etc. Speed 10 miles.



3841—210' steam yacht. Seven staterooms, dining saloon, social hall, baths, etc. Speed up to 23 miles.



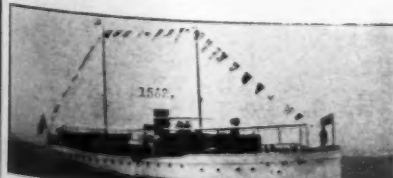
4003—165' steam yacht, six staterooms, three baths, dining saloon, social hall, etc. Splendid seaboat.



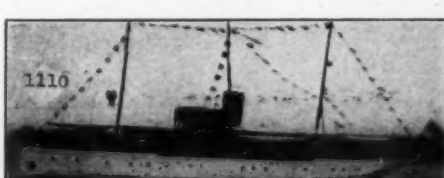
3320—275' ocean-going steam yacht. Large accommodations. Speed 13-15 knots.



1858—37' cruiser. Stateroom and saloon, sleep four. Speed 9 miles.



1543—Twin screw 100' power yacht. Three staterooms, two berths in main saloon, dining saloon, two baths, etc. Speed 15 miles.



1110—95' power yacht. Two staterooms, two berths in main saloon, dining saloon, two baths, etc. Speed 14-16 miles.



1792—40' cruiser. Two berths in saloon and two in engine room. Speed 8 miles.

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Cable Address "Windward," N. Y.

29 Broadway, New York

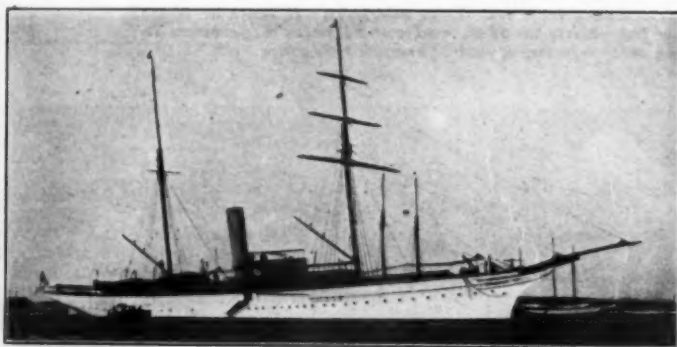
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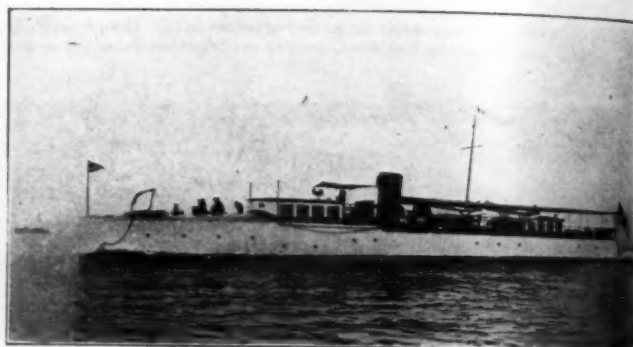
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Description, Prices on Request

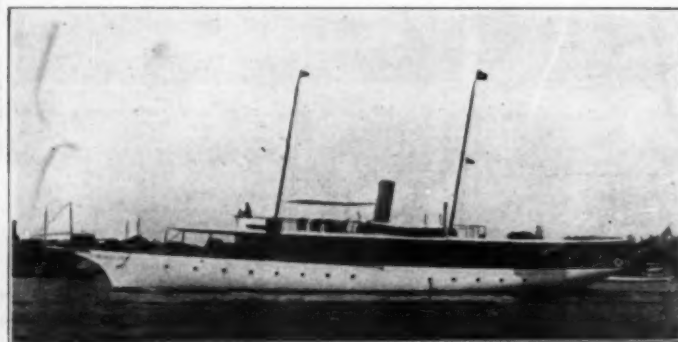
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No. 5663—275 ft. Ocean-Going Steam Yacht. Sale or Charter.



No. 4806—135-ft. Steel Oil Burning Steam Yacht; good speed, excellent condition.



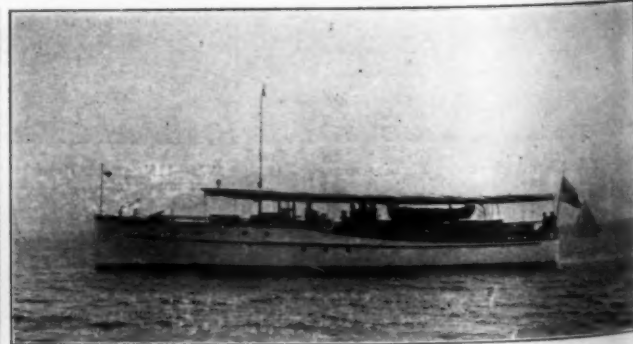
No. 3847—115 ft. Steam Yacht; houseboat type; offered by an Estate at low figure.



No. 5180—110 ft. Power Yacht; twin screw; good speed and accommodations; first class condition.



No. 3658—72 ft. Gas Cruiser, suitable for patrol and coast defense service.



No. 4589—70 x 13 Gasoline Cruiser; good speed; recent build.



No. 7161—50-ft. Gasoline Cruiser; new Sterling engine this year; excellent condition.



No. 3053—40 ft. 25 mile Patrol Squadron Cruiser, acceptable to U. S. Government as such.



No. 5025—Charter—83-ft. well appointed houseboat.

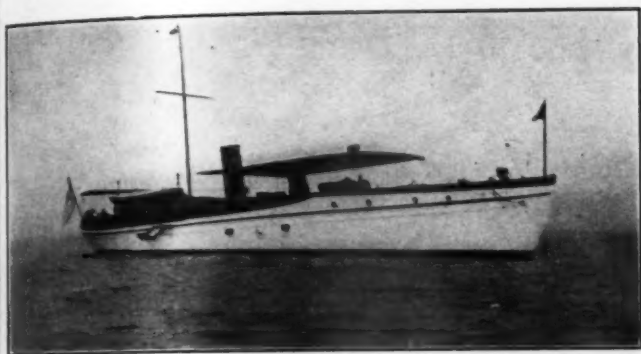
SOUTHERN YACHT AGENCY

American Building

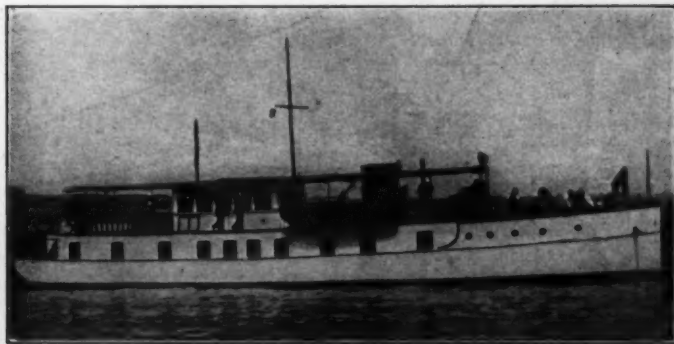
Baltimore, Md.

We have on our list all the desirable yachts available for sale or charter

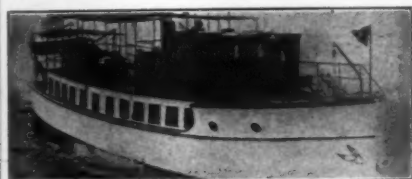
Some representative boats are shown on this page



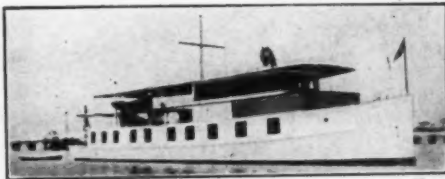
No. 596—Sale—100 ft. Cruiser. Large accommodations. New Standard motor. Fast, Able. Perfect condition.



No. 683—Charter—Twin screw house yacht. 95 x 19.3 x 3.3. Dining saloon, four double staterooms and bath below deck. Heated. Wireless.



No. 736—For Sale or Charter—62 ft. over all, 3 ft. 6 in. draught. Two double staterooms, bath, deckhouse and dining saloon. Practically new. Florida delivery.



No. 730—Sale or Charter—Light draft houseboat. 85 x 18. Standard motor. Hot and cold water. Also salt water bath. Large deckhouse. Five staterooms and dining saloon below deck. Florida delivery.



No. 681—Sale or Charter—68 x 13 x 4. Twin screw. Saloon, two double staterooms, bath, etc. Attractive price. Immediate delivery.



No. 736—Sale—65 x 12.6 x 3.6. Two staterooms and saloon. 100 h.p. Standard. Speed 13 miles. Perfect condition. Very low price.



No. 738—Sale—Houseboat, 51 x 15.5 x 3. Standard motor. Saloon, one single and two double staterooms.



No. 609—Sale—72 x 12 x 3.6. Twin Screw—Speedway motors. Dining saloon and galley in deckhouse. 3 double staterooms and saloon below. Price attractive.



No. 300—For Sale—Cruiser, 70 x 14 x 3.6. Two saloons. Two large staterooms, bath, etc. Winton motor.



No. 703—Sale—V-bottom cruiser, 37 ft.. Very handsome. Perfect condition. Built 1914. Sterling motor 1917. Speed 22 miles.



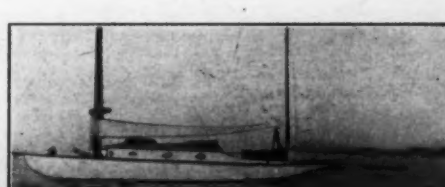
No. 789—Sale—53 x 10.3 x 3.4. Cruiser. Double stateroom, saloon, etc. 30 h.p. 20th Century motor. Speed 10 miles. Bargain.



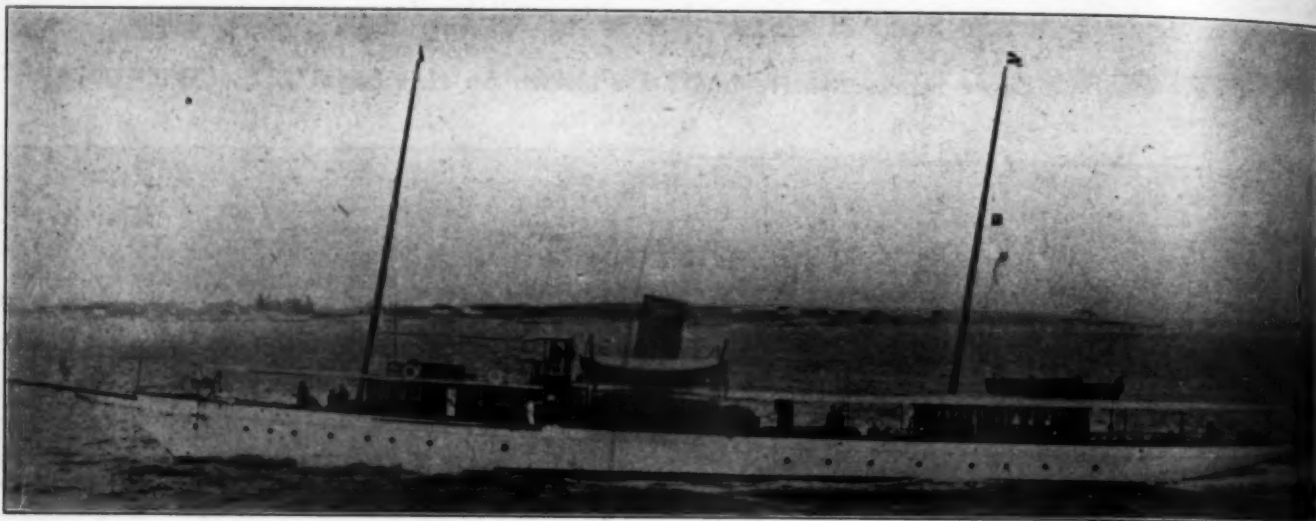
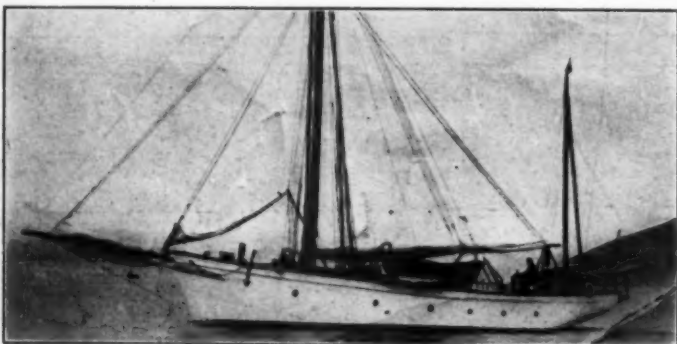
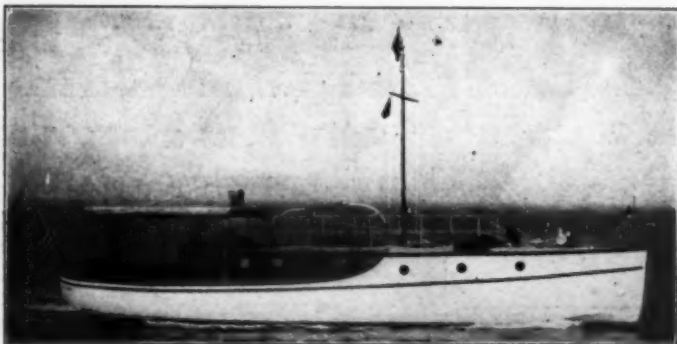
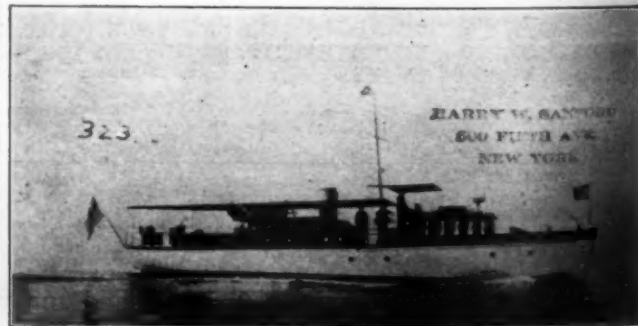
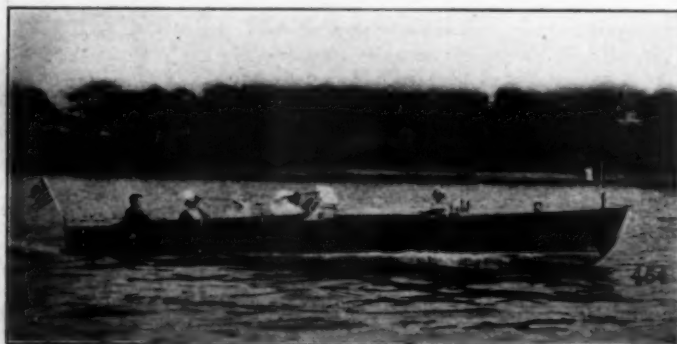
No. 556—Auxiliary sloop. 37 x 27 x 6 x 4.6. Excellent condition. Well built. Sell cheap.



No. 759—Sale—Auxiliary yawl; 58.6 x 39 x 14.4 x 4.6; Sterling 40 h.p. Speed 9 miles. Large saloon, double stateroom, etc. A-1 condition.



No. 711—Auxiliary Yawl. 38 x 25 x 8.7 x 5.6. Excellent condition. Well built. Sell cheap.

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MARINE INSURANCE****YACHT BROKER****500 Fifth Avenue, at 42nd Street, New York****Telephone: 969 Vanderbilt
Cable Address: "Yachton," N. Y.****Desirable Yachts of All Types For Sale and Charter****Full Information Upon Request****On or about April 1st we will occupy our new offices; located in the Astor Trust Bldg., at 501 Fifth Ave., Tel. 969 Vanderbilt****No. 110—For Sale—177 ft. steam yacht. Speed 20 miles. Excellent condition.****No. 64—Sale—54 ft. Auxiliary yawl. Exceptionally fast and seaworthy. Excellent condition. Price attractive.****No. 486—Sale—127 ft. schooner. 4 single, 2 double staterooms. Excellent condition.****No. 337—Sale—43 ft. cruiser. Accommodations for 6 persons. Speed 11 miles.****No. 323—Sale or Charter—75 ft. cruiser. Accommodations for 7 persons. 1 bath. Speed 11 miles.****No. 464—Sale—Attractive 36 ft. runabout. Excellent condition. Speed 24 miles.****No. 627—Sale—56 ft. Naval type scout cruiser. Speed 20 miles. Sleeps 5 persons.***When writing to advertisers please mention MOTOR BOATING, the National Magazine of Motor Boating
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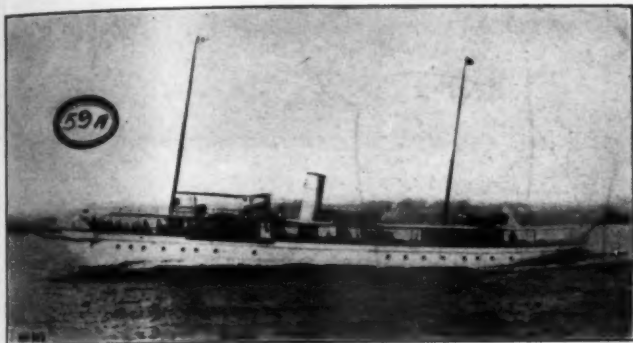
EDWARD P. FARLEY CO.

NAVAL ARCHITECTS YACHT BROKERS

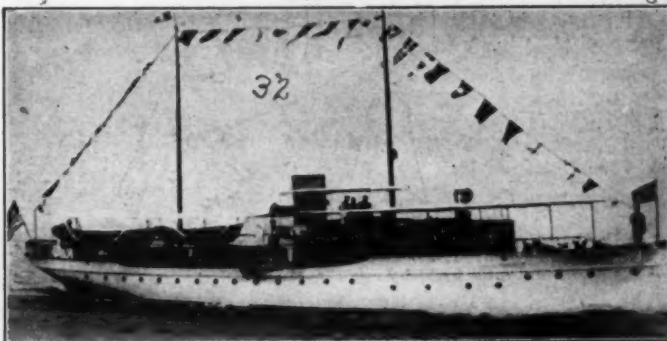
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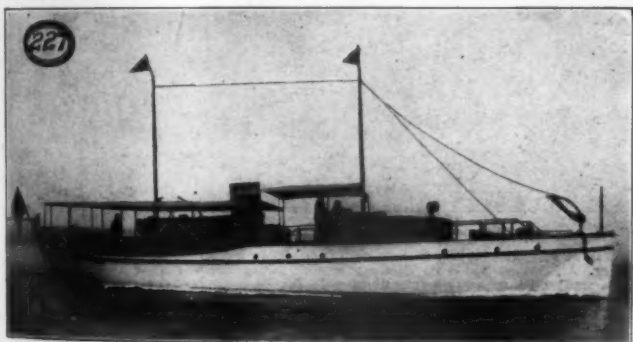
WE OFFER FOR SALE AND CHARTER the most desirable boats of all types on the Great Lakes and Coasts. Plans, photographs and full particulars furnished upon request.



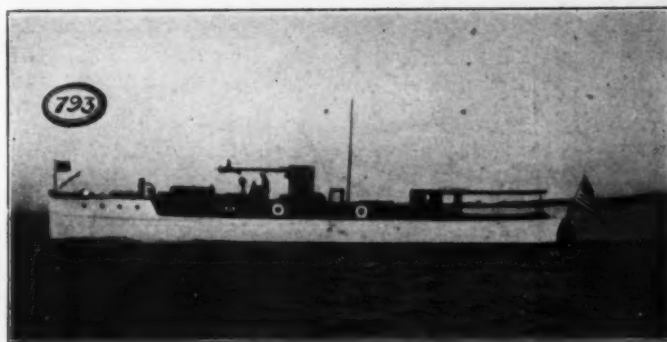
No. 59A—For Sale or Charter—170 ft. steel steam yacht. Fitted throughout in the best possible manner. A very comfortable cruiser.



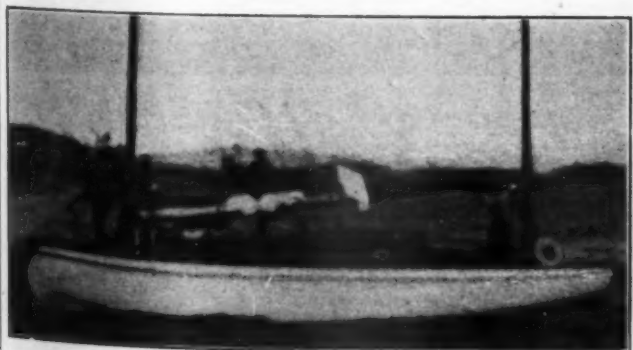
No. 32—For Sale—Modern 98 ft. twin screw cruising yacht. Excellent accommodations and an unusually fine sea boat. Price attractive.



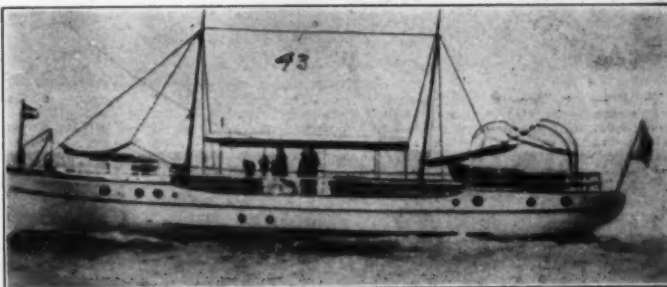
No. 227—For Sale—Finest gasoline power yacht of moderate size available. 80' x 16' x 5 ft. 6 in. Built by Lawley 1915. Two double staterooms. Bath. Two toilets. All modern conveniences. Speed 14 miles. Winton motor. Handsomely fitted and furnished.



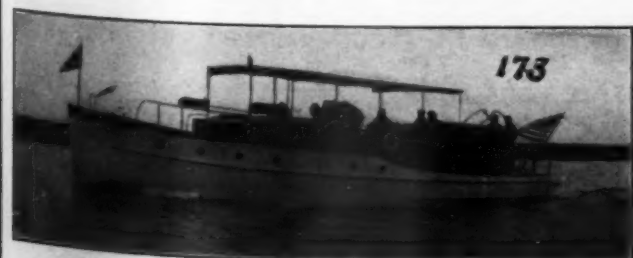
No. 793—For Sale—76 ft. Express cruiser. Fastest boat of type available. Speed 25 miles. Sterling motors. Sleeping accommodation 6-8. Fully equipped for extensive cruising. Built in best possible manner by well known firm, 1916. Price Reasonable.



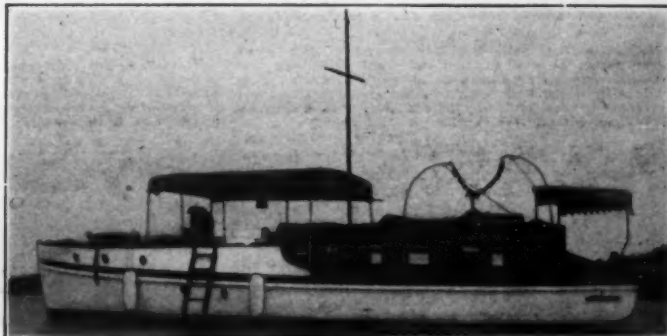
No. 690—For Sale—Shallow draft auxiliary yawl. 35 ft. x 11 ft. 6 in. x 3 ft. Speed under power 8 miles. Sleeping quarters 4-6. Price low.



No. 43—For Sale—Bargain—65 ft. power boat. Exceptional accommodations. Splendid seaboat. Equipped with kerosene burning motor. Located Chicago.



No. 173—For Sale—Exceptionally attractive 55 ft. power cruiser. Built 1915. A splendid seaboat and in excellent condition. Furnished throughout in best possible manner.



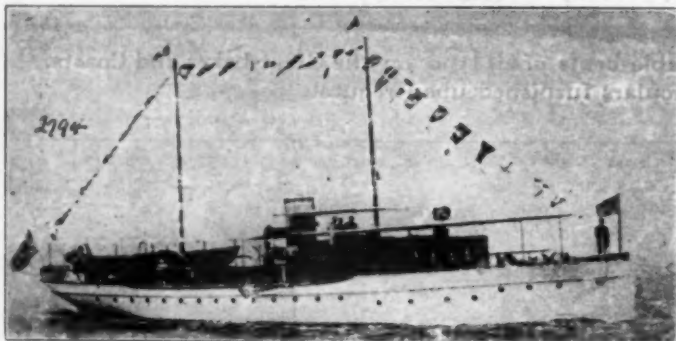
No. 710—For Sale—Bargain—41 ft. Bridge deck cruiser. Large deck space and sleeping accommodations. Buffalo motor.

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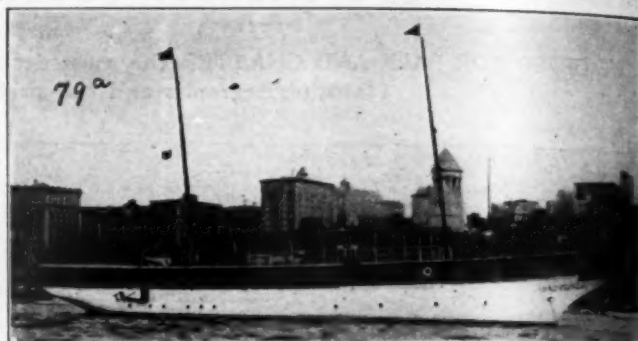
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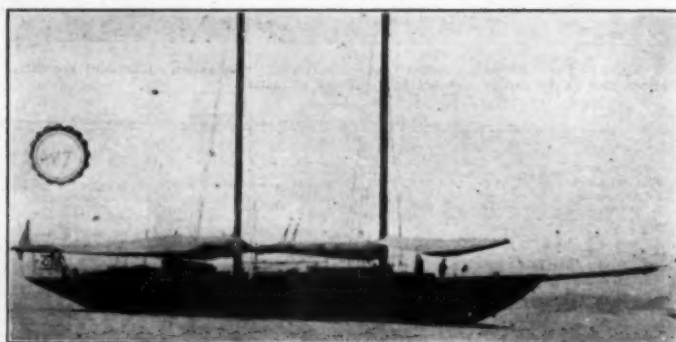
We have a complete list of all steam and power yachts, auxiliaries and houseboats available FOR SALE and CHARTER. A few are shown on this page. Plans, photographs and full particulars furnished on request. Catalogue illustrating types and sizes of yachts we have for sale will be mailed on application.



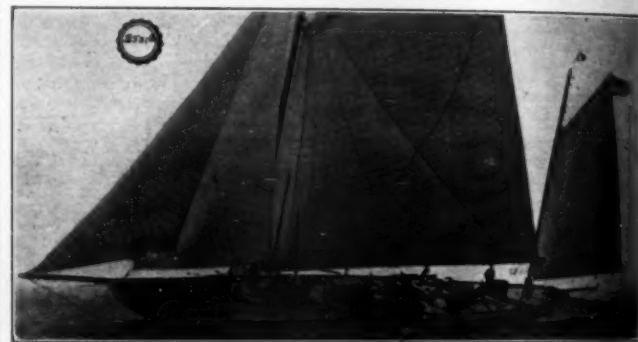
No. 2794—For Sale—Particularly able, modern twin screw cruising power yacht; 98 x 17 x 5.6 ft. Speed 13-15 miles. Deck dining saloon, three staterooms, two bathrooms, etc. Attractive price. Cox & Stevens, 15 William Street, New York.



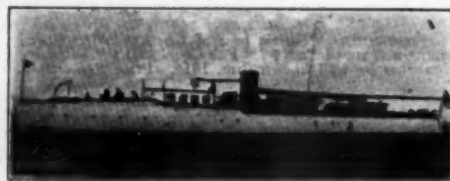
No. 79—For Sale—Exceptionally seaworthy steam yacht; 127 x 18 x 10 ft. Iron hull. Speed 10-11 knots. Economical to operate. Dining saloon and social hall on deck. Recently rebuilt at considerable expense. Has crossed the Atlantic several times. For full particulars apply to Cox & Stevens, 15 William Street, New York.



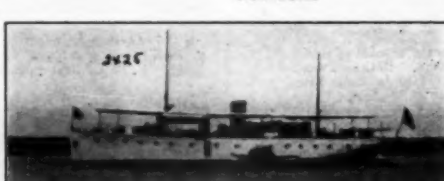
No. 647—For Sale—Modern, flush deck, light draught, auxiliary schooner yacht, 106 x 75 x 24.6 x 5.6 ft. Speed under power 9 knots. Large saloon, three staterooms, two bathrooms, electric lights, hot water heating plant, etc. Cox & Stevens, 15 William St., New York.



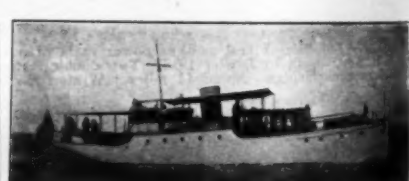
No. 2531—Exceptional Bargain—Most desirable flush deck, keel auxiliary of size available; 94.6 ft. over all, 64.8 ft. waterline, 20 ft. beam, 9.6 ft. draught. Speed under power, 7 1/2 miles, 55 H.P. Sterling motor. Independent electric light plant, Rater sails, and complete equipment, all new 1915. Two double, one single stateroom, two bathrooms, large saloon, etc. Special opportunity. Cox & Stevens, 15 William Street, New York.



No. 396—For Sale—Especially attractive, modern, fast, steel steam yacht (oil burning), with excellent cruising accommodation. Speed up to 18 miles. Accommodations include dining saloon on deck forward; large owner's stateroom, with dressing room, main saloon, three single staterooms and two bathrooms aft. Cox & Stevens, 15 William Street, New York.



No. 2425—For Charter—Twin screw, flush deck power yacht; 90 x 16.6 x 4.6 ft. Speed 11-13 miles. Large main saloon, two double staterooms (full width of vessel) bath, two toilets, etc. Very able craft with abundance of deck space. Cox & Stevens, 15 William Street, New York.



No. 2951—For Sale—Exceptionally able power yacht; 78 x 14.6 x 5 ft. Built 1913 by Lawley from our design. Speed 13-15 miles; 125 H.P. 6-cylinder Winton motor. Dining saloon forward, three staterooms aft. For full particulars apply to Cox & Stevens, 15 William St., New York.



No. 2954—For Sale—Specially desirable, twin screw power yacht; 71 x 13.3 x 3.6 ft. Built 1914; best construction; handsomely finished. Speed 13-16 miles. Four single staterooms, bath, etc., aft, besides saloon and galley forward. Best craft of type available. Cox & Stevens, 15 William Street, New York.



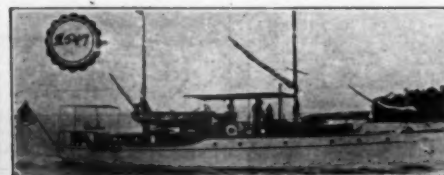
No. 3127—For Sale—Up-to-date, twin screw gasoline cruiser; 64 x 12.2 x 4 ft. Built 1913 in best manner. Speed 12 miles. "Speedway" Motors. Dining saloon forward; two double and one single stateroom, aft. Low price. Cox & Stevens, 15 William Street, New York.



No. 2690—For Sale or Charter—Bridge deck cruiser; 63 x 13.6 x 4 ft. Speed up to 12 miles; 50/65 H.P. "20th Century" motor. Accommodations include double and single stateroom, saloon, bath and toilet room, separate galley, etc. Finished in Honduras mahogany. Cox & Stevens, 15 William Street, New York.



No. 573—For Sale—Roomy twin-screw cruising power yacht; 90 x 14.6 x 3.6 ft. Speed 10-11 miles. Dining saloon forward; large main saloon, three staterooms, bath, two toilets, etc., aft. Very economical to operate. Low price for quick sale. Cox & Stevens, 15 William Street, New York.



No. 2547—For Sale or Charter—Attractive gasoline cruiser; 64 x 12.6 x 4 ft. Built 1913. Speed 11-12 miles. Best construction. Main saloon, and toilet room forward; two staterooms, bathroom, etc., aft. Price low for immediate disposal. Cox & Stevens, 15 William Street, New York.



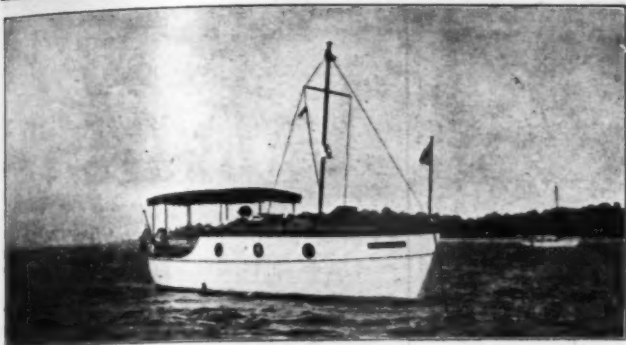
No. 1526—For Sale—Very able, twin screw power yacht, 75 x 14 x 6 ft. Recent build. Very heavily constructed; splendid seaboat. Speed 11 1/2 miles. Two staterooms, large saloon, bath, electric lights, etc. Large deck space. Price attractive for immediate disposal. Cox & Stevens, 15 William St., New York.

THE MOTOR BOATING MARKET PLACE

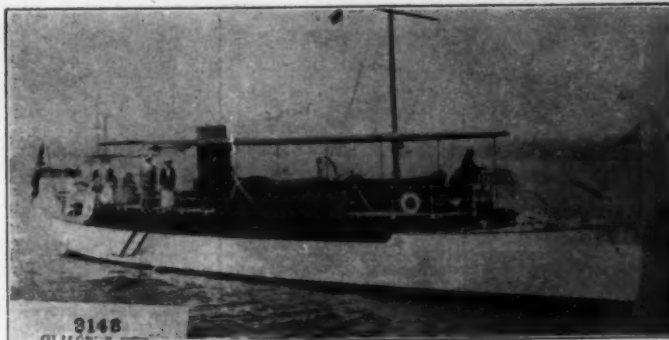
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 Cut one inch deep, one column wide..... \$2
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Opportunities for the Motor Boatman

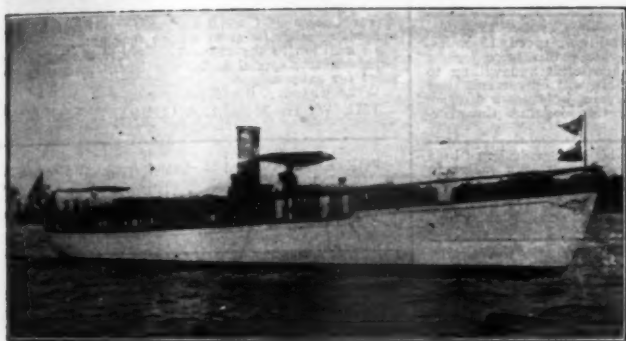
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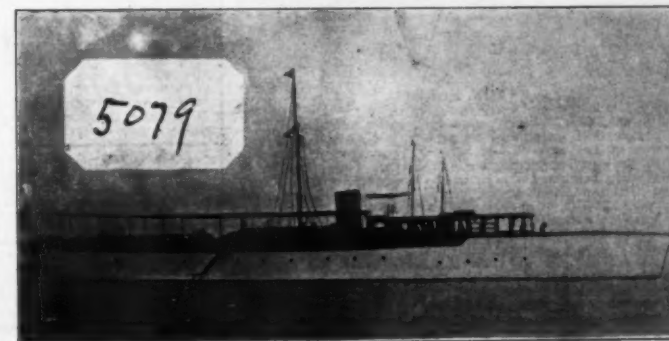
No. 1025—For Sale—95-foot express type steam yacht. Speed 20-21 miles per hour. One double stateroom. Bath room. Cabin and dining saloon. First class condition throughout. Owner has larger yacht. Bargain. For further particulars apply to Strong & Bickmann, Yacht Brokers, 42 Broadway, New York.



No. 3148—For Sale or Charter—73 ft. power yacht. Our design. Three large double staterooms. Owner's bathroom. Handsome interior. Unusual deck room. Comfortable, seaworthy. Apply Gielow & Orr, 52 Broadway, New York.



No. 1025—For Sale—95-foot express type steam yacht. Speed 20-21 miles per hour. One double stateroom. Bath room. Cabin and dining saloon. First class condition throughout. Owner has larger yacht. Bargain. For further particulars apply to Strong & Bickmann, Yacht Brokers, 42 Broadway, New York.

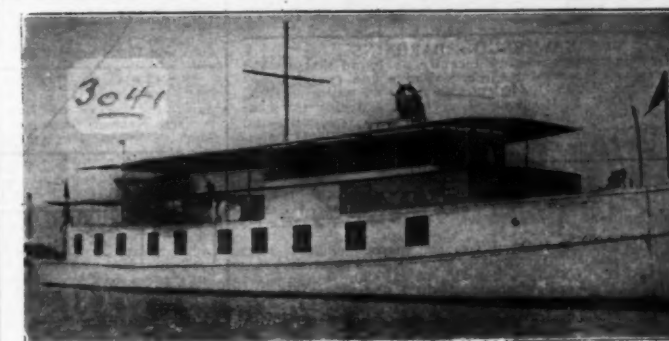


No. 5079—For Sale or Charter—118-foot fast twin screw cruising motor yacht. 3 double staterooms; 2 bath rooms. Large deck saloon. Every convenience. For further particulars apply to Strong & Bickmann, Yacht Brokers, 42 Broadway, New York.

WE ARE RETIRING FROM THE BOATING BUSINESS

and would say to intending purchasers—The wise man inspects and buys—The fool does not—but buys and dies.

1 Cruiser 36 ft. 6 in. o.a., beam 8 ft. 9 in., engine Sterling 25-40.
 1 Cruiser partly completed 33 ft., beam 7 ft. 5 in., one 2-cycle 2-cylinder 11 H.P. Fern; one 2-cycle 6 H.P. Hand saw, tanks, mufflers, anchors, magnetos, wheels, shafts, and all accessories in the boating line. A set of steel wheels and axles to construct moving truck. On view on and after April 15, and to see is only to admire.
 S. L. S. Construction Company—Builders for their own use—Clinton Street and Bay, Tompkinsville, Staten Island.



No. 3041—For Sale for Summer Season—Power houseboat, 83 x 18 x 2.6 draft. 5 staterooms. 2 bathrooms. 20-foot deckhouse. Electric lights. Everything new and in fine condition. For further particulars apply to Strong & Bickmann, 42 Broadway, New York.

AT A BARGAIN—2 cylinder, 2-cycle, 12 H.P. Gray; jump spark ignition, Schebler carburetor, Gies reverse gear, jacketed exhaust manifold, muffler, etc., completely equipped. B. J. B. bronze wheel, 18" x 20" 3-blade. Guaranteed good as new. Care Motor Boating.

BARGAIN—Raised Deck Cruiser 38 feet—20 horse, Twentieth Century, 4 cylinder. Complete cruising inventory. Cost \$4,000. Sell \$1500 cash. L. 558 Hudson Terminal, N. Y.

First-class motor-boat engineer, capable of operating high-speed, high-power gasoline engines. State age, experience, salary expected. Box No. 1, Motor Boating, 119 West 40th Street, New York City.

CANADIANS, Second-hand engine bargains. Send for list. GUARANTEE MOTOR COMPANY, 73 Bay Street, North Hamilton, Ont., Canada

USK "SHAPPER" ENGINES for your small boat. They are a big little engine built by The Automatic Machine Co., Bridgeport, Conn.

BARGAIN—Excellent raised deck cruiser, 35' x 8'6" x 2'6". A-1 condition, new 40 H.P. Loew-Victor motor, fully equipped. Cruising speed, 12 miles per hour. Dr. J. H. LaRoque, 66 Oak St., Plattsburg, N. Y.

Forty horsepower, 300 pounds. Two Roberts, 40 H.P., 1000 R.P.M. 4-cylinder motors. Bosch ignition, prime condition. Name your bid. G. W. Lapp, 17 Platt Ave., Le Roy, N. Y.



FOR SALE—45-foot cruiser, used two summers and one winter, has been from Maine to Miami, Fla.; is in excellent condition and is a good, steady, well-built boat. 40 H.P. engine, cruising speed 9 miles or better. Forward and aft wheels with controls. Has toilet, electric lights, storage batteries, dynamo, etc. May be seen in Marblehead. Address C. W. Shepard, 376 Essex St., Salem, Mass.

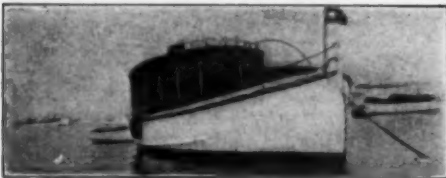
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THE MOTOR BOATING MARKET PLACE

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Opportunities for the Motor Boatman

Before you buy or before you sell examine the exceptional buying and selling opportunities under the heading. They comprise the best offer of the month. Please mention **MoToR Boating**.



FOR SALE—This fine cruiser, 36 ft. x 9 ft. x 3 ft. Accommodations, four persons in the cabin; cushions, toilet room, refrigerator, sink, running water, stoves, buffet, large cockpit, 18 H.P. four-cycle Lamb engine with deck controls which makes it a fine boat for one man to handle. Sacrifice \$1000. Can be seen at Ed. Keil, owner, Glenworth Ave., North Beach, L. I., N. Y.



FOR SALE

The Handsome and fully equipped sloop yacht "Caprice." Staunch, fine looking, guaranteed to be perfectly sound, in the best of order and in perfect trim. Able and seaworthy in any sort of weather. Full inventory from silk plush beds to International Code Flags. Toilet and cabin finished in bright quartered oak. Fancy trimmings. Fancy varnished tender on davits. Patchogue modeled and built sharpie, 12 1/4 ft.; dimensions 42.6 x 12 x 2.9.

Completely equipped for comfort and cruising. Quick and reliable in stays under all conditions of sea and weather. Good anchors, cables and a profusion of deck and reserve rope. Owner stipulates to deliver her to the purchaser at the time wanted, completely overhauled, ready to hoist sails and go in commission.

Original cost about \$3,500. Will sell for \$1,400. Everything forming part of her equipment will go with her without reservation, including canvas cover which is in good order. She needs to be seen to be appreciated. On account of age owner has contracted for a smaller and lighter boat.

She can be seen at Mr. Gilbert M. Smith's basin in Patchogue River, where she has been in winter quarters. Mr. Gilbert Smith is authorized to represent owner and close sale with purchaser. Can correspond with owner for particulars by addressing Joseph Ruffin, 32 Chambers St., "City Court," New York City, or 178 N. Ocean Avenue, Patchogue, N. Y.

NEW ENGINE BARGAINS

In going over our stock recently we found that we had a surplus of parts for three, six, nine and twelve horse-power models, and to balance up stock we will give **SPECIAL LOW PRICES** on these engines during the next sixty days. Write, naming size of engine you want, and we will send literature and a price that will surprise you. Elbridge Engine Co., 326 Main Street, Rochester, N. Y.

GENUINE BARGAINS

3-cylinder, 18 H.P., heavy-duty, Vaughn engine, four-cycle, 6" bore, 7" stroke; Paragon reverse gear, Atwater Kent ignition, force feed oiler. Guaranteed very best condition, \$400.00.

4-cylinder, 22 H.P., Wisconsin marine engine, 3 1/4" bore, 5" stroke; Bosch magneto, enclosed reverse gear. Nearly new. Guaranteed condition, \$350.00.

2-cylinder, 4-cycle Jefferson, 8-10 H.P. with coil, timer and carburetor, good condition, \$100.00.

2-cylinder, 2-cycle, 15-18 H.P. Barber Jump spark with coil and carburetor. Good condition, \$150.00.

4-cylinder, 2-cycle, 32-40 H.P. Emerson. Nearly new. Just the thing for fast, medium or light weight hull, \$200.00.

MARINE EQUIPMENT & SUPPLY CO.
610 Arch Street Philadelphia, Pa.

1 1/2 H.P. Eclipse motor, good condition, \$20.00. Lot of marine hardware left from boat livery. Write for list. Elmer Calkins, Petoskey, Mich.

Trimount	Trimount
Whistle Blower Outfits	Rotary Hand Ridge Pumps
Blower runs by friction contact with engine fly-wheel. Whistle of brass, nickel-plated.	All bronze composition. Suction lift 6 to 20 feet. A lifelong convenience.
3 sizes, \$10, \$15, \$20.	3 sizes, \$20, \$25, \$35.

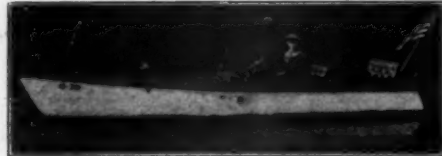
TRIMOUNT ROTARY POWER CO.

20 Heath Street Boston, Mass.
(Factory: Whiting Ave., East Dedham, Mass.)

AT A BARGAIN—60 H.P., 6-cylinder, 4-cycle engine; Atwater Kent and high tension magneto ignition, Schebler carburetor, Michigan reverse gear, universal joint, equipment all new, guaranteed, weight 100 lbs. C. F. M., care of **MoToR Boating**, 119 W. 40th St., N. Y. C.

STEAM YACHT FOR SALE

One of the handsomest and fastest cruising steam yachts afloat, 210 feet over all, speed 14 to 17 knots, steel construction; seven staterooms, two bathrooms, dining saloon, social hall. Great bargain. Apply to your own broker or W. T. McGinley, Waldorf-Astoria Hotel, New York.



FOR SALE—This new 19 ft. runabout, only used four months, selected oak frame, cypress planking, interior and decking quarter sawed oak, piano finish. Motor 4-cylinder, 4-cycle, 15 H.P. Bosch low tension magneto and magnetic plugs, reverse gear, rear starter, Wells electric generator, Willard storage battery, electric lights, life preserver cushions, Pyrene fire extinguisher, etc. Price \$350.00, F.O.B. Racine, Wis. Will sell with or without motor, or motor alone. Boat will be all repainted and as good as new. D. G. Chandler, Racine, Wis.

WANTED—A cruiser not less than fifty, not over sixty-five in length. State dimensions, full particulars of engine and other necessary facts, give correct name and enclose picture. Will buy such a boat giving in return high grade almost new cruiser, 33 ft. long, speed 15 1/4 miles and cash. State lowest price in first letter. Conodoguinet Construction Co., Carlisle, Pa.

FOR SALE—Best thirty-two-foot day cruiser available. Engines and hull in perfect condition, speed 15 miles, f. o. b. New York or Chicago, other points same freight allowed. To one looking for a fine outfit and willing to pay for it, this will appeal. Others will only waste time in writing for while boat is a bargain, it is not a discard. In writing mention Number 65. Conodoguinet Construction Company, Carlisle, Pa.

FOR SALE—A fine outfit. A day cruiser designed by a well-known naval architect, built to order for a yachtman of means. Speed, 16 miles. Boat is 32' 6" long and sold simply because owner desires larger boat. A first rate bargain. In writing mention No. 62. Conodoguinet Construction Co., Carlisle, Pa.

FOR SALE—Runabout (25 foot). A boat worthwhile. Not a cheap boat, but a first rate one. She is Sterling powered and extremely well fitted. Speed 19 miles. We can heartily recommend her. In writing mention No. 63. Conodoguinet Construction Co., Carlisle, Pa.

FOR SALE—Runabout (24' 6"). This boat is a bargain and with her Sterling engine makes twenty miles per hour. She is a beauty and staunch as she is good looking. If a fine outfit at a reasonable price is wanted she is worth while. Unless you want to put fifteen hundred into a boat, don't write; if you do, mention No. 64. Conodoguinet Construction Co., Carlisle, Pa.

FOR SALE—Cruiser. Built for two and a splendid boat. Seaworthy, sound, well powered, almost new. She will cost you twenty-five hundred and is worth it. Speed 15 miles. In writing mention No. 61. Conodoguinet Construction Co., Carlisle, Pa.

WANTED—Gasoline boat, 60 to 65 feet long, 14 to 16 feet beam, about 5 to 6 feet draft, speed from 12 to 15 miles, for use in carrying light freight and passengers. Address Kreetan Company, Johnsonwood, Drummond Island, Mich.

FOR SALE—19-ft., V-bottom, cedar runabout, with 8 H.P., 2-cylinder Roberts engine. Full equipment, new, bargain at \$200.00. Frank E. Pader, Kewaunee, Wis.

FOR SALE—35' mahogany finished runabout equipped with a 200 H.P. Sterling, speed 30-35 miles; 26" Spanish cedar hydroplane equipped with a 250 H.P. high-speed Sterling, speed 40-45 miles; one 200 H.P. high-speed Sterling; one 1 to 1 1/4 gear box; 1 1/4" nickel steel propeller shaft, 14' long; propeller wheels of various sizes and pitches; 1 1/4" Krupp chrome steel shaft, 7' 6" long, standard taper, oil treated, hardened and ground to size, imported from Germany and never uncrated. Everything like new and cheap for a quick sale. J. Petersen, Nyack, N. Y.

A few medium and high speed four and six cylinder, four cycle motors built. Reliance Motor Boat Co., 207th St., Harlem River West, N. Y. City.

MOTOR MANUFACTURERS: Engineering concern of proved selling ability, desires connection with manufacturers of internal combustion motors, who are doing high-grade work. Financial assistance for further development or expansion can be given if conditions justify. Please write, X-36, care of Motor Boating.

FOR SALE—36-foot mahogany runabout hull with new automobile top. Speed 18 miles with 20 H.P. engine. Write for particulars. N. care of Motor Boating.

WANTED—40 to 60-foot cruiser for river use. Please state terms in first letter. Lionel Vancil, Peoria, Ill.

GUARANTEED ENGINE VALUES—3 H.P. Sandow, \$30. 3 H.P. Regal, \$35. 4 H.P. Milwaukee, \$40. 5 H.P. Termaat-Monahan, \$45. 12 w.l.p. Witte, \$50, with gear, \$60. 18 H.P. 3-cyl. Van Epps, \$55. Four-cylinder motors—22 H.P. Buick Model 10, at \$65. 15 H.P. cycle car motor, \$65. 25 H.P. Rutenber, \$65. 30 H.P. Studebaker E. M. E., \$75. 30 H.P. Elmore, \$75. 30 H.P. American, \$95. 30 H.P. Davis, \$85. 35 H.P. Rambler, \$95. 40 H.P. Beaver, \$110. 50 H.P. Continental, \$135. 50 H.P. Rambler, \$145. 60 H.P. Palmer-Singer six-cyl., \$185. 60 H.P. Mitchell six-cyl., \$225. Four-cyl., 7 1/4" bore by 10" stroke heavy duty "MODEL" engine, \$335, and many others. Also magnetos, coils, carburetors, timers, oilers, Prestolite tanks, all style lamps at very low prices. Write us. Badger Motor Company, Milwaukee, Wis.



FOR SALE OR EXCHANGE FOR LARGER BOAT: Cruiser 40 feet long, 10 feet beam, 5 feet draft. Brand new 30 horse power Lamb engine. Address Kreetan Company, Johnsonwood, Drummond Island, Mich.

EXCEPTIONALLY LOW PRICES

Owing to changes we have made in a number of our models, we have on hand the following supplies and materials, which in order to dispose of, we will sell at **LESS THAN THEIR ACTUAL COST TWO YEARS AGO**, which means about one-third of what they would actually cost you today at present prices.

Write us today for special Bargain List comprising the following:

Cold Rolled Steel Propeller Shafting, Carburetors, Single and Double Unit Spark Coils, Auto Tops, Life Preserver Cushions; Cockpit Covers, Spray Hoods, Avings, and many other items of marine equipment.

In addition to the above we also have a number of rebuilt engines, special hulls, row boats, canoes and equipment for canoes.

Write us today, it will pay you.

THE W. H. MULLINS COMPANY, Salem, Ohio.

FOR SALE—Raised deck and trunk cabin cruiser, 13 ft., fully equipped, in good condition; galley, toilet, electric lights, sleeps four, 12-16 H.P. Heavy duty Hall engine, speed about 10 miles. Bargain at \$1000.00. Address Jos. P. Dumesnil, 729 W. Main St., Louisville, Ky.

WANTED—To buy, lease or operate on shares, and motor boat passenger or freight business. Send full information to L. W. Kattelle, 55 Hanson Pl., Brooklyn, N.Y.

FOR SALE—Used and partly used carburetors. Will sell all or part of lot: 7 Stewart, Duplex, 2 1/4"; 1 Stewart, Aluminum, 2"; 1 Stewart, Duplex Aluminum, 2"; 1 Stewart, Brass, 2"; 11 Rayfield, 2"; 1 Polyrhone, 2"; 1 Stewart, Aluminum, 2 1/2"; 8 Stewart, Brass, 2"; 14 Rayfield, 2 1/4".

VAN BLERCK MOTOR CO., Monroe, Mich.

SACRIFICE

PENNSYLVANIA GLOBE ENGINE—4 cylinder, four cycle, 50 h.p., absolutely perfect condition. Bosch and ignition, magnetic plugs, bronze propeller, grinding, stern bearing, shaft, carburetor, exhaust muffler, everything complete and ready to install; had very little service. Owner installing more power is only reason for selling. Price, complete, \$1,475.00. The outfit and ignition system cost \$2,430.00. Address C. V. Cellos, 417 Natchez St., New Orleans, La.

Mobile, Ala., is an ideal location for building of power boats. Midway of the Gulf Coast, cheap timber, near the Birmingham steel mills. Big demand for power boats all along the Gulf, Cuba, West Indies and Central America. Direct steamers to said countries. Mobile Light and Railroad Co.

FOR SALE—Trunk cabin cruiser, 30 x 9, 16 Horse Power, four cylinder Regal engine, fully equipped, and in commission; will sleep four comfortably. Just the boat for southern waters. For further information address A. J. Chisolm, 20 Church Street, Charleston, S. C.

WANTED—32-ft. raised deck cruiser, 10 miles. See worthy boat not over five years' old. Sleep four. Toilet. Galley. Electric lights. 6 ft. headroom. Comfortable equipped. Want bargain. Arthur Fuller, Mohican Hotel, New London, Conn.

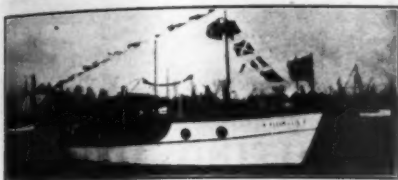
FOR SALE—Speed and comfort, 34 x 7 ft. runabout with substantial top, 60 to 70 H.P., 18 actual miles. Perfection gear, safety starter. Perfect, \$800; cost \$2400. J. R. Qualey, Quincy, Mass.

THE MoToR Boating Market Place

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Motor Boatman**

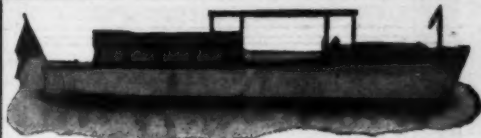
Before you buy or before you sell examine the exceptional buying and selling opportunities under this heading. They comprise the best offers of the month. Please mention MoToR Boating.



FOR SALE—36 x 9 x 3 cruiser; Sterling engine; 10 miles; auxiliary sail; sleeps 8; full equipment. \$1800. Charles H. Brist, Monadnock Block, Chicago.



36-foot ELCO-DE-LUXE, 8-ft. beam, mahogany finish; 4-cylinder, 40 H.P. engine, speed 11 miles. Built in 1912 and used on fresh water lake. Boat and equipment in perfect condition. Price favorable. Communicate. A. L. Salt, No. 195 Broadway, New York.



COMFORTABLE DAY CRUISER

40 x 8 ft. day cruiser. Quartered oak finish. Full equipment. Will sell with or without motor. Just the boat for day cruising on river or lake. Not designed for heavy ocean service. Niagara Motor Boat Co., 1 Sweeney St., North Tonawanda, N. Y.

FOR SALE—4-cylinder, 50 H.P., Rutenber motor. Bosch magneto, Schebler carburetor, clutch, transmission, oil and water pumps; complete. Price, \$80, f. o. b. Dixon, Ill. W. Hoffmaster.

FOR SALE—V-bottom cruiser, 33 x 8', built 1915 by day work. 15 H.P., 2-cyl. Ferro engine. Cabin forward, cockpit amidship, cabin aft. Complete equipment. Price, \$2500. For particulars, address F. S. Nock, East Greenwich, R. I.

FOR SALE: 25 ft. by 5 1/2 ft. runabout; Buffalo 4-cycle, 4-cylinder, medium speed engine; dual ignition, engine in covered front cockpit, auto wheel, chairs and cushions. Speed, 12 to 14 miles. Also 21 ft. by 5 1/2 ft. open runabout; Niagara boat, with auto cover; 2-cylinder Ferro engine, dual ignition, cushions, electric lights. Ready for water May 30. Speed, 9 miles. F. C. Stephens, 130 Vermont Street, Buffalo, N. Y.

Van Blerk E4, 65-85 H.P. Absolutely new. Not yet delivered from factory. Attractive price. The following used engines both in fine condition: Wolverine, 36 H.P., 3-cylinder with reverse gear, complete. Globe, 40 H.P., heavy duty, 4-cylinder with reverse gear. E. H. Allen, Box 1537, New Orleans, La.

Ralaco Marine Engines

THE S. M. JONES COMPANY

616 Segur Avenue :: :: Toledo, Ohio, U. S. A.

Quiet Running
Sturdy Construction
Economical in Operation
 1-10 of a Gallon of Gasoline per
 H. P. Hour
 10 to 75 Horse Power
 2 to 6 Cylinders

MoToR Boating's Increase

39,942 Lines Advertising
 47,943 " "
 8,001 " **GAIN!**

Last April
 This "



BURT T. STANTON, Naval Architect
 RUNABOUTS LAUNCHES DESIGNED and BUILT
 Stock Boats for Detachable Motors, PRICES MODERATE
 Phone Harrison 4008
 234 South Fifth Avenue, CHICAGO



HACKER DESIGNS HYDROPLANES
 EXPRESS CRUISERS
 SEND FOR BOOK OF STOCK DESIGNS

HACKER-BUILT BOATS

Speedy HIGH CLASS RUNABOUTS. I am building under my own personal supervision a limited number of high grade
Safe 28 and 32 foot runabouts of the refined V-bottom wave-collecting type. Plans and specifications on request.
Seaworthy

JOHN L. HACKER, N.A., 327 Crane Ave. Detroit, Mich.

ENJOY YOUR BOATING DAYS TO THE FULL-EST EXTENT

BUY AN AEROTHRUST!

It will take your boat through the shallow and weedy places. See the 1917 model at your dealers, or write for booklet. Dale-Rey Corporation, 150 Lafayette St., New York, Eastern Distributors. Scripps Motor Co., 17 Battery Place, New York, Foreign Distributors.

AEROTHRUST ENGINE COMPANY, 503 Madison Street, La Porte, Indiana

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NAVAL ARCHITECTS & YACHT BROKERS

JOHN G. ALDEN

Yacht Broker and Naval Architect

131 STATE STREET, BOSTON, MASS.

Room 616 Telephone, Fort Hill 2483

BOWES & MOWER

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**Engineers and Naval Architects
Yacht Brokers**

**15 WILLIAM STREET, NEW YORK CITY
TELEPHONE 1375 BROAD**

WILLIAM J. DEED, Jr.

NAVAL ARCHITECT

YACHT AND VESSEL BROKER

Specialist in the design of Motor Boats of all types
Let me know your needs

112 WATER STREET BOSTON, MASS.

William H. Hand, Jr.

NAVAL ARCHITECT

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HAND-V-BOTTOM DESIGNS

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Naval Architect and Yacht Builder.

Marine Railways, Storage, Repairs

EAST GREENWICH RHODE ISLAND

HARRY W. SANFORD

YACHT BROKER

500 FIFTH AVE., at 42nd ST., N. Y.

High-class sail and power yachts for sale and charter.
I shall be pleased to offer my services to those interested in
purchase, sale or charter of any type of yacht.

Naval Architecture Vanderhilt 969 Marine Insurance



110-FT. Yacht "CONSUETO"
Now Building at Lawley's, for J. PERCY BARTRAM,
Eq., of the New York Yacht Club.

DESIGNED BY

J. Murray Watts, N. A. 338 Chestnut St. Philadelphia

**Rebuilt Engines backed by a strict
Guarantee**

Bruna, Kimball & Co., 115 Liberty Street, New
York City, offer over 200 rebuilt engines, fully
guaranteed, at exceptionally attractive prices. List
will be sent free for the asking. Your present en-
gine will be taken in part payment for a new Star-
ling, Kermath, Missouri, Harris, Eagle. Write for
offer.

Specifications for the Naval Patrol Scouts

(Continued from page 41)

be supplied complete and installed in conning tower with cabin or pilothouse control.

An emergency 14" incandescent Golden Glow searchlight or equal to be mounted alongside and used from the regular circuit without starting the generating set.

Dome light on bridge deck under awning.

Light in house side at each gangway landing.

Two dozen 10 c.p. frosted round bulb Mazda lamps to be supplied; also one dozen, unfrosted. One dozen carbons for arc and one-half dozen Nitrogen lamps for incandescent lamps for searchlight.

Painting:

Inside of hull, below deck to have three coats of red lead paint; above floor three coats lead paint.

All crevices alongside of keel not properly drained by limbers to be flushed with marine glue.

Cabin floors to receive two coats of lead colored paint.

In owners' quarters where pine is specified all work to have at least three coats of flat white and two coats of glossy enamel, the last coat to be rubbed to a dull egg-shell gloss.

All brightwork, mahogany, etc., inside to receive three coats Edward Smith Bros. or equal interior varnish, which is to be rubbed to an egg-shell gloss in owner's quarters.

Crew's quarters, engine-room, and lazarette to have three coats of colors, as selected.

Under deck between beams in after cabin ceiling to be finished with three coats flat white, two of enamel, and rubbed to correspond with balance of room.

Outside of hull, below waterline, after proper smoothing, caulking, etc., to receive three coats Marblehead Green or equal anti-fouling paint. An enamel boot top or stripe about 4" above the waterline. The topsides to be finished in four coats of French gray, the final coat to be mixed with spar varnish. Cabin sides, hatch, and all brightwork to receive three coats Berry Brothers' Luxberry spar varnish, or equal.

Gold decorations at bow, name or other device on bow and stern as may be requested.

Mast, spars, small boat, etc., all to receive at least three coats Luxberry spar varnish.

Davits, rail and stanchions, anchors, and all ironwork to have two coats of aluminum paint.

Engines:

Two eight-cylinder Duesenberg motors installed side by side as indicated. Motors to have 6 1/4" bore 7 3/4" stroke, weight about 3,700 lbs. and to deliver 400 h.p. at 1,500 revolutions; they are each to be equipped with a Leece-Neville double-unit starting motor and generator with batteries as previously described, and 24-volt pressure, besides an air pump for pumping the gasoline from main to gravity service tank.

Pressure oil system with cooling arrangement for the oil.

Water pump of the positive rotary type; the motor is equipped with a bilge pump.

Tachometer and air pump for whistle.

A Stewart or equal float feed carburetor.

High tension, two-spark magneto, etc., complete.

The shafting to be of Tobin bronze about 2" diameter.

Propeller wheels right and left of manganese bronze with tail nuts of bronze.

Exhaust to be through the stern; a 5" to 6" OD No. 18 Stubbs copper, or brass tube with bronze flanges at joints.

The exhaust from each engine to connect to main pipe by a brazed and worked copper branch.

Provision to run all or any part of cooling water with the exhaust line for silencing purposes.

Sea valves for circulating water of the gate type with strainers and scoops over openings.

Equipment:

In general, not previously specified.

One 12' cedar and mahogany copper-fastened tender with extra high freeboard, and 4' 9" beam; to be complete with rowlocks, oars, boat hook, khaki boat cover, cradle, lignum vitae block and falls, 1 1/2" diameter davits, guys, etc., complete.

One set flag poles; two brass tipped boat hooks;

1/2 dozen cork jackets; two ring buoys, properly lettered in gold; Stewart-Warner revolution counter;

six Pyrene extinguishers and brackets; one Cory deck telegraph 6" dial, double handle twin screw type; one speaking tube; one annunciator in galley with call bells in owner's stateroom, forward cabin, main cabin, and bridge deck; one boarding ladder; one 8" brass bell, name of boat engraved thereon; one 2" diameter x 11" organ tone Crosby whistle on conning tower.

For the smaller boat, less expensive rugs may be considered, and the hand-woven variety which are now everywhere to be had, and promise to increase in vogue the coming season, are quite desirable.

In the South from Virginia to Louisiana they have long been in favor for small boats, while Pacific boat owners are now giving them preference to Japanese jute rugs—these latter being, to my notion, unsuitable for boat decoration. Linoleum will continue to hold its own against substitutes as a floor covering for the galley, although rubber may be employed for companionways, and cork is most acceptable to many for the floor of the bath. It will be well wherever linoleum is employed for the boat owner to have it covered (immediately after it is laid, cleaned, and

Taste in Furnishing and Decoration

(Continued from page 10)

gaily patterned carpets should be excluded from consideration. Rich deep blues, old golds, warm grays, olive greens, gray greens and tans will safely establish satisfactory keynotes for the decorative schemes of the motor yacht where the walls are white, ivory or nickel.

Rugs, of course, find their place in fair weather on deck as well as below. In any event it is worth while to choose the best to be had, for the fine grade rugs have a "floor-clinging" quality that recommends their use. While there are many excellent domestic rugs the Orientals will hold the attachment ever to be felt for them. In choosing an Oriental rug it is necessary to reflect that the pattern must be such as will conform to the limits of the cabin and not prove unduly obtrusive. Neither must it "fight" in color with other accessories. White walls again help one out in this matter of selection and one is more likely to find in Oriental rugs just the right sort of thing in soft but distinctive colorings.

For the smaller boat, less expensive rugs may be considered, and the hand-woven variety which are now everywhere to be had, and promise to increase in vogue the coming season, are quite desirable. In the South from Virginia to Louisiana they have long been in favor for small boats, while Pacific boat owners are now giving them preference to Japanese jute rugs—these latter being, to my notion, unsuitable for boat decoration. Linoleum will continue to hold its own against substitutes as a floor covering for the galley, although rubber may be employed for companionways, and cork is most acceptable to many for the floor of the bath. It will be well wherever linoleum is employed for the boat owner to have it covered (immediately after it is laid, cleaned, and

(Continued on page 66)



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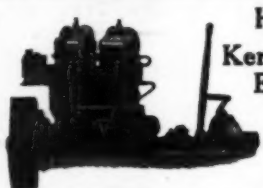
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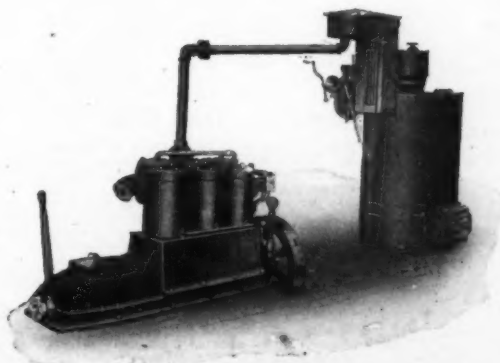
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AMONG THE CLUBS

U. S. Power Squadrons Committees

At a meeting of the governing board of the United States Power Squadrons, held in Boston early in March, this body took action on many questions, including mapping out a plan whereby the Squadrons could be of assistance to our Government at this time; provision for flying the United States ensign at the stern of Squadron boats during the coming summer instead of the Squadron ensign; the appointment of an executive committee, consisting of the chief commander, the treasurer and Roger Upton to act for the governing board on urgent and important matters; the subdivision of the committee on examination, and a committee on instruction. The former, which will consist of Roger Upton, W. A. Hopkins and H. A. Vose, will have charge of the entrance examinations, and the latter, consisting of H. A. Jackson, A. B. Bennett and C. F. Chapman, will have charge of the member as soon as he has received his certificate; the instruction meetings and the examinations for junior navigator and navigation. The question of associate members and provision for their admission was referred to the committee on instruction.

Another action of the governing board was to provide that a member who resigns after having been a member for at least three years shall be allowed to retain his certificate. The Squadron year was made from May 1 to April 30.

In place of the Squadron ensign flown from the stern staff the governing board adopted a pennant to be flown from the mast-head of masted boats above the private signal or officer's flag, and from the bow staff of open boats. However, members who prefer to fly the Squadron ensign which has been flown at the stern may fly it from the main mast-head or bow staff instead of flying the above-mentioned pennant.

The new Squadron pennant is three feet in length by six feet wide at the head. It consists of a red field at the head eight inches long, containing one five-pointed white star, followed by seven alternate three-inch white and blue stripes and one seven-inch blue stripe at the tip. A brass strip is sewed to the pennant at the head so that it may be made fast to the top of the mast or to the top of the staff carrying the private signal or officers' flag. It will be flown day and night.

A number of squadrons have recently taken up the study of the Morse Code and are practicing it with blinker lights at their meetings. In the January *Ensign* (the official organ of the Squadrons) there was outlined a very easy method of learning and memorizing the Morse Code, suggested by Captain Belknap. It is promised that in an early issue of the *Ensign* Commander Jackson will have a practical article on the equipping of Squadron boats with blinker lights, a thing which should be done by every member and can be effected at a cost of only a few cents.

Commander Upton, on account of confidential work which he has been doing for our Government, has been obliged to resign as chairman of the governing board. Commander Upton's resignation has been accepted with much regret, and the office will not be filled for the present at least. The administrative work will be directed by the chief commander and the executive committee.

Westchester M. B. C. Has Merry Evening

The last monthly social of the Westchester Motor Boat Club of Clason Point, N. Y., was a memorable one both in the point of attendance and in a large amount of entertainment derived from it by the club members. Contributory to its success were several bowling matches in which prizes were given to participants of both sexes. Dancing was next in order, and the evening was rounded out by an appetizing supper.

Growth of the Middletown Yacht Club

One of the most successful yacht clubs along the Sound is the Middletown Y. C., of Middletown, Conn., which was organized in 1896 by a few enthusiasts who borrowed \$4,000 to purchase the necessary waterfront property. The secretary informs us that visitors are always welcome, while the thirty-mile trip up the beautiful Connecticut River is alone worth any man's time.

After twenty years of existence, through efficient management and rapidly increasing membership, the club last year held its property free and clear, and had more than \$5,000 in the savings bank. This prosperous condition was largely brought about by the worthy efforts of the various house committees and the men who in the last few years have served as chairmen of them. Walter Reed and Robert Merriam are two of these and Herbert C. Danforth, who has been chairman for a number of years and is likely to remain so for as long as the club can persuade him to keep the job, is a third. Last year the house committee under his chairmanship did a \$7,500 business in the sale of gasoline, oil, batteries and other miscellaneous supplies and made sufficient progress to keep the new concrete and stucco clubhouse in perfect condition, pay the salaries of the steward and the boatman, and turn over several hundred dollars to the treasurer at the end of the season.

When the club's new house was built, it was financed by doing three things: taking the \$5,000 surplus out of the savings bank, borrowing \$4,000 from a local bank, and raising \$3,000 more from the members by subscription. Eight hundred dollars of the loan was paid off last year from the regular dues and the profits of the house committee.

At the club's annual election the following men were appointed to office for the ensuing year: Commodore, T. Macdonough Russell; vice-commodore, Chas. H. Norris; rear-commodore, M. S. Cornell, Jr.; treasurer, G. Ellsworth Meech; secretary, Harold A. Wil-

liams; measurer, Clarence W. Marble; house committee, Herbert C. Danforth, Paul R. Curtis and Oscar Davis; representatives to the American Power Boat Association, T. M. Russell, M. S. Cornell, Jr., and A. D. Meeks.

Long Island Sound P. B. A. Holds Annual Meeting

At the annual meeting of the Long Island Sound Power Boat Association at the New York Athletic Club the following men were elected for office for 1917: Chairman, Henry A. Jackson; vice-chairman, Herbert L. Stone; secretary, H. W. Lowerce, and treasurer, H. C. Cushing, Jr. The meeting was also made important by a discussion of the various details of the races to be held during the coming season from New Rochelle to Newport for the New York *Herald* trophies, and the Wallace Consistency Race for prizes offered by Commodore Joseph H. Wallace.

Philadelphia Yacht Club Elects

The annual election of the Philadelphia Yacht Club, of Esington, Pa., resulted as follows: Commodore, Philip H. Johnson; vice-commodore, J. Fred Betz, 3rd; rear-commodore, Robert J. Williams; recording secretary, S. W. Bookhammer; measurer, Thomas F. Durham; fleet surgeon, Dr. T. Lewis Adams; harbor master, Thomas W. Boyd; and trustees, George W. Fite, O. R. Heiligman, S. S. Barth, Thomas F. Durham, William A. Christy, Ed. K. Nelson, and Arthur Bloch.

Oakland County B. C. Plans Opening

The Oakland County Boat Club of Pontiac, Mich., the only boating club in the county, has just constructed its first and only clubhouse and is making elaborate preparations for the opening in the middle of May. This club has a present membership of eighty—a figure which, it is confidently expected, will be doubled by the end of the season—and the club fleet includes at least one boat which is capable of 38 m.p.h. The new clubhouse measures 40 x 50 feet overall, and has more than 900 square feet of porch space on each floor. The first floor, finished in maple, will be used for balls and banquets, and the upper story is partitioned off for the club rooms and kitchen. Below the first floor wells are provided for the storage of motor boats. The clubhouse is located within two miles of the city of Pontiac, and the electric car line runs within three minutes' walk of it.

Columbia Y. C. Re-elects

The annual meeting of the Columbia Yacht Club which was held on March 6 resulted in the re-election of the entire staff of officers with one exception. Charles A. Schieren becomes the new rear-commodore. The rest of the ticket is as follows: Commodore, Frederick Berg; vice-commodore, Coleman duPont; secretary, George R. Branson; treasurer, Chas. Green Smith; measurer, Chas. O. Gunther; and trustees, Walter Lutting, Joseph S. Whiteside and Chester Alexander.

New Officers for the Huguenots

At the twenty-second annual meeting of the Huguenot Yacht Club, held last month at New Rochelle, the following officers were elected: Commodore, George E. Vigouroux; vice-commodore, J. H. Wheeler; rear-commodore, George G. Bell; treasurer, Frederick B. Lewis; secretary, George G. Allen; and trustees, Herman N. Williams, Theodore I. Coe, Dr. Edward Sanford, and H. Meyrick.

A. P. B. A. Booklet

The American Power Boat Association has just published an interesting booklet which gives the story of its origin and its development in a period of fourteen years. This booklet is of particular interest to students of design in that it includes the various formulae under which motor boats have been rated by the Association, pointing out their early defects and how they have been corrected. It also chronicles the history of the Gold Challenge Cup and tells the story of the international activities of the Association.

The Sheepshead Bay Yacht Club

Among the most enterprising yacht clubs of Greater New York is the Sheepshead Bay Yacht Club, situated at Emmons Ave., Sheepshead Bay, L. I. This organization has outgrown its quarters and recently acquired a long time lease on waterfront property of the most desirable kind, its new clubhouse now being altered to fit it for the use of the members and their friends. Ample storage space has been provided for winter quarters, and a marine railway has been already installed which will accommodate yachts up to 45 feet in length. The location is ideal because the grounds are easily accessible from the city and are situated within a short distance of many summer amusements; proximity to all kinds of nautical supplies is an additional advantage. Tennis courts, a bathing beach, shower baths and a large float at the foot of the lawn all contribute to the pleasure of the yachtsman.

The club has recently published a booklet setting forth the advantages of the new location as headquarters for enthusiastic amateur tars. It has a cover in three colors and is illustrated with photographs of the boats of the members.

The officers for the coming year are: Commodore, J. E. Schiffmacher; vice-commodore, J. B. Adams; rear-commodore, L. W. Seeligberg; secretary, A. A. Scharbus; and treasurer, J. T. DeMott.

Chesapeake Bay Y. R. A. Designates Cruise Week

The Chesapeake Bay Yacht Racing Association, of Baltimore, Md., has selected July 21-28 inclusive for its annual cruise and has laid down its itinerary as follows: Baltimore to Sherwood Forest to Oxford to Cambridge and return. At the annual election of officers, A. C. Thompson, Baltimore Yacht Club, was made president; G. Porter Houston, Sherwood Forest Club, vice-president; Stuart Stevens, Cambridge Yacht Club, secretary-treasurer, and L. V. Hewins, Capital Yacht Club, measurer.

First Annual Meeting of Onondaga B. C.

The Onondaga Boat Club, of Syracuse, N. Y., enters upon the first year of its existence in a highly prosperous condition with twenty-three charter members, and many applications on file. The officers of this club for 1917 are as follows: John J. Hand, commodore; Robert L. Allen, vice-commodore; Fred A. Pettis, secretary, and Earl Hallenbeck, treasurer.

Officers of San Francisco Y. C.

At the annual meeting of the San Francisco Yacht Club, of Sausalito, Cal., the following were elected to serve as officers for the ensuing year: Carles Earle Miller, commodore; E. R. Folhemus, vice-commodore; Frank M. Garden, secretary; Wilfred Page, financial secretary; Philip J. Fay, treasurer, and John Barneson and Carl J. Rhodin, directors at large.

Baltimore News

The final details for the removal of the boat club to Fort McHenry have at last been arranged by the committee appointed by Mayor Preston, of Baltimore, Md. The plans, which do not differ from those agreed upon by the Secretary of War, the Mayor, and the boat club representatives when they met a few weeks ago, have been sent to the Mayor for his approval, and it is stated that if nothing happens in the meantime there will be no trouble in getting a formal approval of the Secretary of War. As soon as this has been obtained the work of moving the boat club will be undertaken. Notwithstanding the fact that this operation will take up a good deal of the time of Baltimore yachtsmen, the members of the club are looking forward to a big season.

Bergen Beach Y. C. Takes Unusual Step

At the regular monthly meeting and annual election of officers held in Brooklyn on February 6, the Bergen Beach Yacht Club unanimously resolved that the national flag of the United States be flown from the mast-head of the clubhouse and from the stern of all the boats in the club fleet. It appears (from the printed matter distributed by the secretary of the club, F. C. Haab, Jr.), that "there was considerable agitation last year against the yachting ensign," and that it is the general opinion of the members of the club that "it is our right and wish to sail under the flag of our country." As this is the first club officially to reject the yachting ensign, it is likely that its members will spend a large share of their time in the future explaining to outsiders that they are not flying the national flag through inadvertence or ignorance of custom. Following are the officers elected for the season of 1917: J. C. Snackenber, commodore; George L. Ford, vice-commodore; J. E. Burns, rear commodore; F. L. Hough, Jr., treasurer; Harry W. Kierstad, financial secretary; Frederick C. Haab, Jr., recording secretary, and J. A. Lindstrom, measurer.

Election of Eureka Y. C.

The Eureka Yacht Club, of Newark, N. J., has elected the following officers for 1917: Commodore, Albert W. Kronich; vice-commodore, Edward B. Wuerts; rear commodore, Dr. J. P. Hall; treasurer, Henry H. Caruso; financial secretary, Chas. Wold, and recording secretary, Elliot S. Hunt.

Chelsea B. C. Adopts New Constitution

Under date of March 1, the Chelsea Boat Club, of Norwich, Conn., issued a new club book setting forth the constitution, by-laws and house and boat rules of the organization. Growth of the club and changed conditions had necessitated the formulation of a new constitution, and this was adopted toward the close of 1916. The club's new by-laws were adopted January 24, 1917.

Annual Ball of American Model Y. C.

Upward of 500 merrymakers attended the Seventh Annual Ball of the American Model Yacht Club on the evening of March 16, at Prospect Hall, Brooklyn, N. Y. The grand march was led by Carolyn and Mrs. D. A. Plunkett, and the dancing which followed was made all the more enjoyable because of the excellence of the orchestral music provided.

Measurer Paul H. Bell gave the members their first view of fifteen silver trophies which are to be run for this season.

The committee in charge comprised Vice-Commodore W. F. Coyle, Chairman C. L. Donnell, R. Ferguson, G. Gilleland, C. Johnson, E. Kennedy, George Walters and H. Webb.

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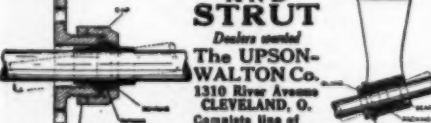
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The Prize Contest

(Continued from page 23)

Of course a certain lifting power in the plane of the horizon must occur, but if it is excessive, the previously mentioned defect is produced.

The overhang bow in all types from the smallest tender to the largest dreadnaught is decidedly the most seaworthy. Whether it is the A bow or the B bow it has those principles that make it seaworthy—it has an easy entrance, it lifts at the proper time, repels the solid water that would come over the bow, and offers no great resistance to the boat's passage through the water. Other bows do this, but not as well as the overhang.

Sterns of the D and E types will offer little resistance when the bow rises in comparison to a stern of the F type. This latter has the tendency in heavy weather to force the bow into the waves. Speedy boats must have sterns of the F type despite all, in order that they may trim well when running and keep the bow in its proper place in the water.

Yet on large craft a torpedo or a compromise stern can be used for all speeds. This paradox is due to the fact that a tender enlarged would make a poor ship and vice versa.

The seaworthiness of the compromise stern has never been questioned. Other modifications of this type are found in the several dry types and lifeboat models.

The V-bottom has a bow all its own. It might be called a combination of the plumb and the overhang and possesses those qualities that make for speed and seaworthiness. Present day practice links it with the plumb stern.

Sterns to be seaworthy must complement the bow by allowing an easy remingling of the displaced waters, exert a lifting power happily proportioned to that of the bow, and act as a bow when the seas are astern.

Speed will be a matter of horsepower with all types, but the larger craft will have the overhang or the destroyer bow with the ship or the torpedo stern, while the smaller boats will use the V-bottom or the plumb bow with a broad stern in either case.

JAMES E. MURPHY, New London, Conn.

Consideration of the Common Types

AIDED by the drawings at the bottom of page 23, I hope to answer the question by presenting the popular types of bows and sterns and discussing their good and bad qualities.

A very popular type is either the whaleboat or the rounded overhang bow; both vary in degree of curvature and overhang, the latter not exceeding 45 degrees in best practice. These two types are good in a seaway, as, owing to reserve buoyancy, they rise over the wave and throw down the spray in a manner somewhat similar to that of a flare bow. Striking a rock or other obstruction, they have a tendency to ride over it (causing less damage). Running through thin ice they rise upon it, crush it, and keep going, when a straight bow would dig in and stop.

For racing, where the length of the boat is limited, the straight stern with plumb stern gives highest efficiency; this stem supplies more useful room, but requires a long straight keel and thereby turns slowly; it shears the seas admirably, but is more liable to bury itself in a wave than is the whaleboat bow. Similar in qualities to the overhang bow are the dory and canoe bows, the latter confined to small boats; both are very good in a seaway.

The advantage of a flare bow is illustrated; it is drier and its increased buoyancy adds to its seaworthiness. A heavy bow wave kills the crest of the oncoming wave, wherefore a full bowed boat is drier than a fine bowed one. On the main sheer, the height of the bow should exceed the height of the stern by about one-third.

The stern is more important, for its sections must be of correct form or the result will be a poor seagoing boat; if the sections are too wide or too flat, the stern will hold down the bow and will also cause the boat to yaw badly. Tumblehome sections add much to appearance and seaworthiness.

For boats making frequent landings the fantail stern is good, as it rolls away from the dock; if driven over eight miles an hour it squats and drags a huge wave behind; it is likely to be pooped by a following sea.

The torpedo stern, though pretty, is not seaworthy, but on the other hand the rounded and the V sterns have good seagoing qualities, and are very pretty and excellent for high-speed work, as they allow the bow to rise without depressing the stern. The square stern also has good seagoing qualities, and is easier to build, but it is not so pretty.

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Mr. Joe Petrelli begs to announce to the marine trade and motor boat owners in general his withdrawal from all former connections in order to devote his entire attention to the production of

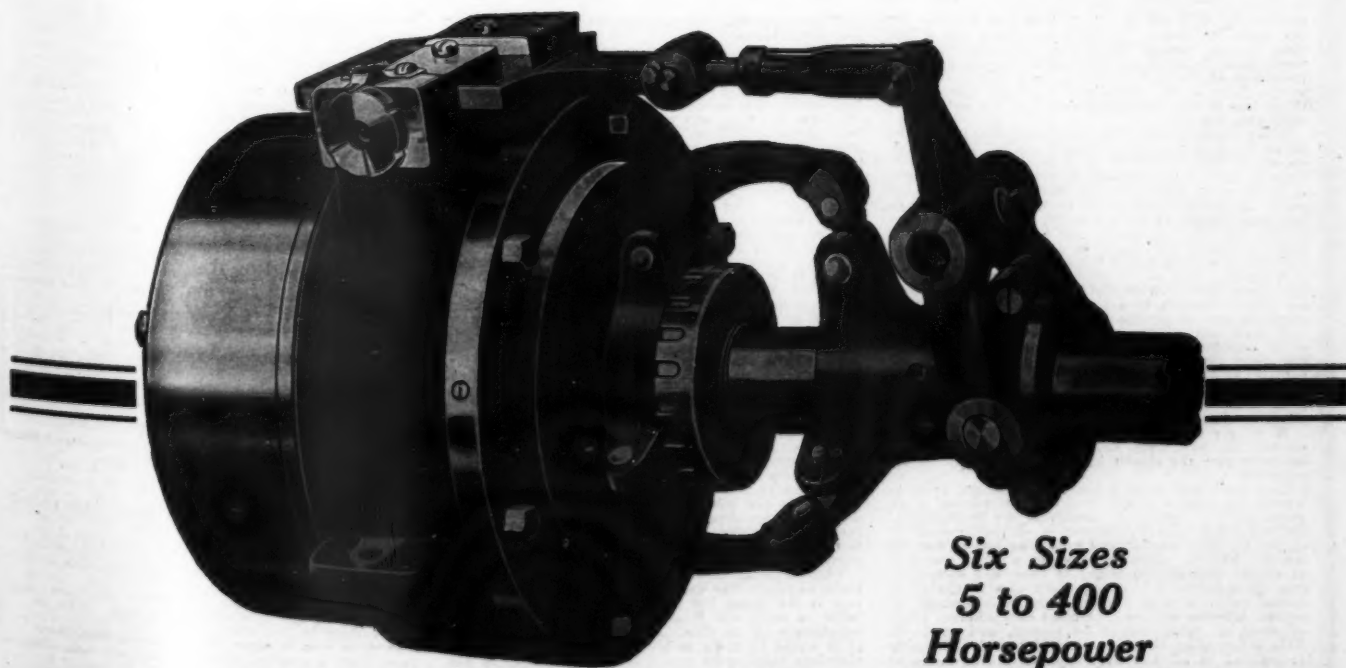
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Advertising Index will be found on page 43

Next Summer's Cruise Down East

(Continued from page 19)

restored to place it worked as well as ever and the mysterious noise ceased—a great relief, as an unusual, irregular noise if not understood is very annoying, to say the least, and may indicate serious trouble; it never gave any further bother.

Naskeag Harbor was enough protection during this quiet night, although the tide raced by us at quite a clip, and we swung first one way and then the other. This would have worried us had we been using the ordinary form of kedge anchor with a stock for the rode to wind around and trip, but our navy-type anchor, weighing forty pounds, was just the thing in this muddy bottom. We also carry a thirty-five-pound kedge anchor and a fifty-pound twin anchor which are seldom used, though at times have been absolutely necessary.

The next morning broke bright and fair with an oily calm. As we passed out of the eastern entrance to Naskeag Harbor we got our first glimpse of the blue outlines of Mt. Desert. Entering the lovely Blue Hill Bay, we passed an unusually pretty little island with dainty clumps of evergreen trees on its top. We hunted for it on the chart only to find it named "Smuttery Nose." Surely the perpetrator of such barbarous nomenclature deserved a jail sentence for this affront to nature. Blue Hill Bay is a broad expanse of water with an interesting border of mountains which certainly were blue. Our course was E ½ N to the black spar off Lamp Island, then S E by E past West Barge and East Barge to the Spindle, bell and beacon on Ship and Barges Ledge, and then E S E to Red Spar at Bass Harbor between Great Gott's Island and Mt. Desert Island. The magnificent steam yacht Arcady passed us here, answering our salute.

Mt. Desert is the largest island on the coast of Maine and is absolutely unique in its topography. Although the northern portion of the island is comparatively flat, the southern and center are very high and mountainous with wonderful, jagged cliffs abruptly dropping to the ocean, which at some places is deep close up to shore. Beautiful valleys and lakes are tucked away in high, unseen places. The ranges are divided into eastern and western mountains by Somes Sound which runs up into the center of the island.

After leaving Bass Harbor Head Light and then the bell off The Nubble we took our course between Cranberry Island and Mt. Desert—a route called The Western Way, and suggestive of a Norwegian fjord. Entering Southwest Harbor we anchored astern of an odd craft with the interesting name of Sea Flea, near Clarke Point, and were soon hailed by an anxious-looking individual who inquired whether our flag represented the U. S. Revenue Cutter Service. His relief on learning that we were just plain cruisers was very amusing. Our Power Squadron flag was the cause of his worry, as he lacked life preservers and several other articles required by law. This flag added other gaiety to our cruise before the end of the season.

The friends we had hoped to surprise here were not at home, so we decided to take a trip up Somes Sound without them. This sound runs right into the heart of Mt. Desert Island, has high mountains on each side and the water is over 150 feet deep close to shore by Robinsons Mountain, which is 680 feet high. At the foot of it is the start of a foot path, where we saw several motor boats and canoes waiting while their passengers made the climb up the tortuous path to the summit. We could distinguish them away up on the side of the mountain like so many white ants.

Bar Harbor, which guards the entrance to Somes Harbor, is small and wooded, with several log cabins and chalets so hidden by the trees that one might easily pass without seeing them. The harbor is very attractive with its little coves and inlets and a village at the upper end where several yachts and speed boats were anchored. The return trip with its new viewpoint was equally interesting. At one point a

spar buoy was serving as an anchor for a wee fisherman in a dainty white sailor suit, whose boat was a varnished yacht tender, so shiny that it seemed a crime to use it for fishing; but, no doubt, there were plenty of deck hands on the mother yacht to clean it when the young Isaac had finished his catch.

Leaving Somes Sound we passed several summer colonies and made for Northeast Harbor as the sun was getting low, and there was a chill in the air. Clouds in ragged wisps were forming on the mountains, and the barometer was falling. We passed Manchester Point and Gilpatrick Ledge, noting the splendid sun-heated swimming pool which is a great blessing to those not vigorous enough for the cold water of the ocean. The clouds suggested an easterly storm, so the wonderful protection of Northeast Harbor looked good to us. We anticipated a hot supper from our shipmate in a cozy cabin, let it blow or rain as it would. There is a wonderful feeling of hominess about the cabin on a small cruiser, and when the weather gets cold and damp it is indeed a luxury to be able to climb down into a warm and dry cabin where there is a smiling wife preparing supper.

Northeast Harbor, with Bear Island at its entrance, affords splendid protection, for it has high hills all around, which cut off the wind, and the entrance is narrow and the holding ground good.

After supper, wishing to inspect the village in spite of the rain, which was then falling, we donned oilers and in a few minutes of walking from the public landing reached the main street. After sending cards to friends, we indulged in the movies, which were as good as may be seen in the large cities. The storm increased to a heavy blow during the night, but in that snug harbor all was silent except for the beating of the rain on the deck, a sound which served to lull us to undisturbed slumber. As we have curtains all around the cockpit, Dhila was comparatively dry in the morning.

It is necessary once in a while to have a bit of bad weather in which to catch up on some of the homely details of living, such as cleaning house, darning stockings and work on the engine, so while the weather was trying to clear the next morning we thus occupied ourselves. The little flat spring which holds the breaker box on the magneto had become broken, and the breaker box was no longer held snugly in place—which caused the engine to skip sometimes. I took a piece of hack-saw blade, heated it red hot to draw the temper, then filed it to shape, drilled the necessary hole, bent it properly, heated it again to a cherry red, and plunged it into oil to temper it. With this all done I riveted in place on the magneto a spring which was the equal of the old one. I find it every convenient to have a few machine tools along on a cruise of this kind.

In the afternoon the weather seemed settled, so we left this most beautiful of Mt. Desert harbors for a sail along the east shore of the island to Bar Harbor. This was one continuous panorama of wonderful mountains, cliffs, and little coves with beautiful homes scattered along at intervals. The natural beauties of the trees and surroundings have been carefully preserved, the gardening around the houses being so planned that it fits into the landscape perfectly. There were no great stretches of artificially clipped lawns, such as are seen at Newport.

Near Seal Harbor we actually saw some seals, which seemed fearless and barked like playful dogs, at times coming near enough for us to see them making faces at us. Seal Harbor has very little protection for boats, but is a summer resort of a high class. From here to Little Creek Point there were no dwellings to be seen from the water—just Mt. Desert, in all its noble grandeur. We were now in Frenchman Bay and running about north, this being the furthest point east we would make on this cruise, so from now on we would really be on the way home. The island is very precipitous along here, with real piraty-looking caves at the top of tiny, sandy beaches, the trees growing close to the water.

On Great Head Point was an interesting circular stone tower whose history is unknown to us. Back of this headland were Beehive and Newport Mountains. Across Frenchman Bay to the east is the Schoodic Peninsula, a blue outline in the distance, and Winter Harbor, which we were not to visit on this cruise as we had to draw the line somewhere. We passed Schooner Head, a high promontory where, when the light is right, one can plainly see the outlines of a schooner in the cracks of the ledge. There is a large gun mounted on this commanding site, which is naturally a magnificent place for a fortification.

The location of Bar Harbor is splendid, though the water front is disappointing, as it is disguised with coal docks, dirt and smoke. From the yachtman's standpoint the harbor is rather unsatisfactory, as it gives poor holding ground, and is rather open and exposed. From a visit ashore we attained an entirely different viewpoint, however, and readily saw why Bar Harbor is so famed. The lovely walks and drives into the mountains for those that love nature are innumerable, while devotees of sports find golf, tennis, boating, etc. The social life is, of course, a prominent feature of this famous resort, while the town has many fine shops whose attractions are calculated to deprive one of his good money.

Leaving Bar Harbor we passed through thousands of jelly fish which are always thick during the latter part of July, but this seemed to be the place that manufactured them, as we had never observed so many at once before. Dhila's bow literally tumbled them over like a plow. The majority were small, round, and milky-looking, although there was a generous sprinkling of the coffee-jelly kind with long brown feelers streaming behind—the species that sting the unwary swimmers.

The number of handsome estates diminishes as you go north from Bar Harbor, and the trees and rocks look a bit more primal and unvisited. Here we found The Oven's Mouth, a series of caves or washed-out places at the base of the cliffs at the head of a series of fine sandy beaches. The land becomes more flat and low to the northward, with an occasional cove in among the trees. The stretch of water here, known as Eastern Bay, gradually becomes smaller until a point is reached where it becomes the Mt. Desert Narrows.

As we glided up the Narrows we realized that the tide would be too far out for us to pass the bridge, and as it would not be high tide until about midnight, we decided to wait until the following day to pass through the bridge. After passing two little islands called the Twinnies, the bridge came into view, and we anchored in Thomas Bay for the night in a little side channel where we hoped the tide would not run past too lively. While supper was being prepared I took the tender and explored the channel toward the bridge. Before coming within half a mile of the bridge, I found it too shallow even for the tender, so after noticing the courses and turns carefully, I turned back.

Several seals were frolicking about with an occasional lark and splash, but there were few signs of human life, and it seemed that we were alone with nature in this most beautiful setting. With supper over night had almost fallen, but we enjoyed sitting in the cockpit and gazing at the stars and the outlines of the trees and hills against the dim and fading colors in the west.

After retiring we were rudely awakened by a bumping noise that quickly brought us on deck. But we found only that the tender, acting under the influence of a breeze that had sprung up against the tide, was nudging close to Dhila. Having no boat boom we were at a loss to know what to do, but finally took a galvanized bucket with about a fathom of line and hung it from the stern of the tender. This contrivance acted on the principle of the sea anchor, and with the tide held the tender well astern, so that we were permitted to pass a comfortable night.

Brightening Up the Brightwork

(Continued from page 12)

and not brush it all off. Note how long it takes the two varnishes to dry. There is no reason why a first class marine varnish should not dry thoroughly in twenty-four hours if the surface of the panel or the undercoat of varnish is dry to begin with. In other words, there is no reason why it should take two or three days to dry and accumulate dust and bother you with time wasted.

When the two last coats are thoroughly dry on the panel throw it face down into a pail of water, fresh or salt, or tie it with a string to the stern of your boat. Take it up in a day or two and see the result. Leave it in the water and take it up in a week and note the result again. To the extent to which either varnish has been discolored by the water, it is not a perfect marine varnish. It should not be discolored in the slightest degree, but should be as fresh and clean and lustrous as when put into the water.

A quicker way of obtaining the same result is to let boiling water run on the panel. This will show up an inferior varnish in a few minutes, but should not affect the perfect varnish in the slightest degree.

A good test of the color of varnishes is to take equal amounts and put them into thin glass tubes of the same size. Slight differences of color will be quickly apparent in this test, and it should be remembered that a slight difference in color will make a great difference in the appearance of varnishes applied, for instance, over a white or any light shade.

If we are to get 100 per cent. efficiency from the varnish on our boats, whatever the brand we use, we must give the closest kind of attention to its application.

It doesn't pay us to get a bad finish and have to lay up for repairs in the height of the season, if an extra quart or gallon of varnish at the beginning of the season will make it unnecessary. It is poor economy to use too little varnish and nearly as bad to use too much. Varnish manufacturers, as a rule, are glad to supply printed directions, or they will take your case up specially, telling how much varnish should be spread per coat over a given area (this amount, of course, differing with each varnish) how different kinds of wood or fabric should be treated, and so forth. This information should be sent for and thoroughly assimilated by all who have boat varnishing to do or to direct. No matter how much you know about varnishing in general, do not attempt to use any material for the first time without availing yourself of advice

from someone well informed on the particular product you have chosen.

Wooden boats to be sailed in salt water should have an application of anti-fouling bronze paint below the waterline to prevent the growth of barnacles or grass. Many are made of pure bronze powder combined with best quality spar varnish. Such paints cannot be used on metal boats in salt water. After two coats have been applied and have hardened, the surface should be gone over with fine sandpaper. This serves two purposes. It cuts back any varnish film that may be on the surface and leaves the bronze exposed. If the bronze is covered by varnish, it serves no useful purpose, and a clear varnish might as well have been used. Furthermore, sandpapering smoothes the boat bottom, and cuts down frictional resistance.

Generally it is desirable to touch up the varnish work on a boat about mid-season and again when it is laid up in the fall. Whether or not it is desirable to scrape down every spring and refinish from the wood up depends on the quality of the varnish used and the protection given to the boat during that winter. It is not always necessary, or desirable to do so.

We may sum up by saying that paint is cheaper, but less desirable than varnish to the average boat owner, except where an anti-fouling paint is needed on bottoms; that some varnish is needed on every boat; that a quick-drying and water-proof varnish serves the yachtman well; that proper application of the varnish is of the utmost importance; and that varnished work should be touched up at mid-season and again when boat is laid up. A covering to protect the boat from the elements while laid up is calculated to make scraping necessary less often.

There is one other point that merits special attention. As a broad proposition it may be stated that the costlier a finishing material is to buy, the cheaper it is to use. Of course, there are exceptions, but the point is that durability is the important quality. Varnish A at twice the price of varnish B lasts twice as long. The cost of the actual varnish in each case is the same, but the labor cost (or trouble) is twice as much for B as for A. A gives better satisfaction all the time. Actually, A at twice the cost of B would be likely to last more than twice as long, therefore showing an actual saving in material as well as in labor.

As far as the physical application of varnish is concerned, there are certain principles that must be ad-

hered to, no matter what material is used. First of all, no matter how carefully you apply the varnish, it is absolutely impossible to get satisfactory results unless the surface on which it is applied is absolutely—might almost be said, chemically—clean. If you are varnishing over old coatings it is just as necessary that these be in good condition, showing no signs of perishing, becoming porous or loosening. Also, the presence of any moisture, oil or grease on the surface to be varnished will cause trouble. The surface must be dry. If any wax as well as clean and in good condition. If any material such as is contained in many polishes has been used on your boat this must all be removed with the greatest care, or it is certain to cause trouble when you come to varnish.

Close-grained woods are usually treated somewhat differently from open-grained woods. Close-grained woods include cherry, birch, white wood, maple, pine and cypress, while oak, ash, walnut, and mahogany are open grained. Close-grained woods may be coated first with a reliable wood primer, followed by three coats of varnish, or the primer may be omitted. The function of the latter is to stop absorption and keep the wood from drinking up too much varnish. Open-grained woods may be finished in the same way, although the smoothest and finest appearing finish on such woods is obtained by the use of a first application of mineral paste filler, followed by three coats of varnish.

Working with a clean brush is also a necessity if first-class results are to be obtained. Starting with a new brush, after the varnish has been applied for the first coat, the brush should be suspended in raw linseed oil or brush-keeper varnish. Special receptacles for oil or brush-keepers are made in which to hang brushes to keep them free from dust, and these form an economical part of your equipment. When you are ready for the second coat, the oil or varnish should be carefully washed from your brush with turpentine, and then the brush should be shaken or beaten dry, or as nearly dry as possible.

The ideal temperature for varnish application is about 70° F., and it is not safe to apply the average spar varnish in cold weather, say, below 50° F. Varnish dries best in clear, dry, breezy weather. The varnishing, if possible, on stormy or humid days. The best spar varnishes are less affected by moisture during application and the drying time, but the safe rule is to pick out a good dry day for your varnishing job.

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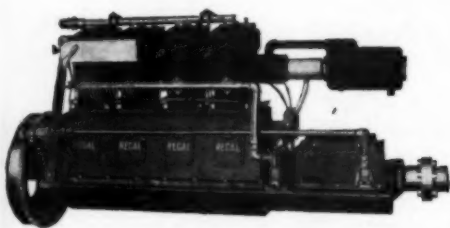
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(Continued from page 58)
dried) with some high-grade and well-wearing varnish. Not only does this act as a preservative but it adds to the attractiveness of the linoleum as well.

HARDWARE

Just how important a decorative feature the boat's hardware is too often fails to impress the owner until it is too late for change to be made. The choice of hardware ought to be guided—at least when it comes to a large motor yacht—by some thought of the final decorative scheme. There are locks, latches, door pulls, belts, handles, hooks, port-hole fixtures, knobs, push-buttons, direction plates and plates of other sorts, door stops, drawer pulls, elbow catches, finger-plates, keys, key-plates, grilles, hinges, etc., to be thought of. Then the amount of care that will be required to keep these in condition should not be overlooked in selecting patterns, particularly when fitting the motor yacht of modest proportions. There is no reason why the boat's hardware should not, some of it at least, be especially designed for the craft, and every reason that it should be in a fine boat where such a plan can be afforded. At any rate let the hardware be artistic, simple without forbidding severity, and well made. Avoid all unnecessary projecting handles, but remember that inset handles should be of designs that do not make the furniture to which they are attached look like packing cases. In the matter of style, it is best to forego the infinite variety that produces confusion in effect. Let one style predominate to the greatest possible extent. Owners of motor yachts will find such books as "Locks and Builders' Hardware," by Henry R. Towne, and "Sea Craft Suggestions and Supplies," by Wilcox, Crittenden & Co., of great service in studying up the matter of ship hardware.

LIGHTING FIXTURES

The placing of lighting fixtures is, of course, of prime importance, yet their design is of hardly less moment. Here, as in the matter of the hardware, elegance and simplicity should dictate the choice of models and the bizarre and commonplace should not be permitted a place aboard ship. Scraggly, dust-catching, hard-to-clean patterns should be eschewed, as there are dozens of suitable and attractive designs in lighting fixtures to be had. Not an excuse, either in the matter of assortment or economy, is possible in selecting the wrong fixtures. Both top lights and bracket lights, as well as drop lights, may be had in designs peculiarly appropriate to sea-faring for pleasure; Neptune, the Dolphin, the Trident, the Wheel and many other allusive motives of decoration are employed by the up-to-date manufacturer of lighting fixtures suitable for motor yacht decoration.

DRAPERIES AND UPHOLSTERY

There is everything in the way of textiles for the decorator of the motor yacht to select from. Fortunately, inexpensive materials are as visually attractive as expensive ones and consequently appropriate fabrics in perfect taste may be selected to fit any purse. In decorating the small boat, fussily patterned draperies should be dispensed with, as these detract from the sense of spaciousness desirable. On the other hand, it often happens that strikingly patterned materials of distinctive designs add greatly to the attractiveness of a comparatively small saloon. For motor yacht decoration I give personal preference to high-grade silks for curtains in the small cabin. Velours must be used with discretion as hangings, fitting into the scheme of larger boats more appropriately than for draperies of small ones. On the other hand, velour is an excellent upholstery material. Well chosen mono-colors are best. They should be in complete harmony with the floor coverings; this likewise applies to hangings.

Cushions and pillows should always be of the best possible wearing material. And here let me say that cheap "felt monogrammed" pillows should be relegated to the demands of those college freshmen who encourage these products of a nefarious taste and abundantly support the industry; they should have no place in cabin or saloon of the up-to-date motor yacht. As thorough comfort is essential to pleasure boating, all the upholstery, mattresses, cushions and pillows should be made of the best materials. There should be no stinting here.

FURNITURE

Happy should the owner be who does not feel it necessary to make the boat fit the furniture, but can sail ahead and get the proper furniture for the boat. Just what the proper furniture must be depends not only on the boat but on the people who are to sail her. A well decorated motor yacht may be blasted by being fitted up with ill-chosen furniture.

The wicker furniture so appropriate for the summer cruise has departed from much of its ancient unattractiveness and the newer bizarre forms that for a while threatened to interfere with the development of logical attractive forms are fortunately coldly received. Now the motor yachtsman has a fine display of especially comfortable, appropriate and attractive pieces in wicker furniture to choose from. For the deck, wicker is ideal, for it is light without being "tippy," tidy enough to please the most fastidious and always as pleasing to look upon as it is comfortable to occupy. The wicker tables are now being made with special reference to yacht requirements and nothing could be better for the smaller boat's deck use than these. Fine quality of enamel furniture will find its place below, and the bath of the larger motor yacht will naturally be fitted with pieces of this sort.

As to mirrors, designers, builders and architects as well as decorators of motor yachts have come, more and more, to appreciate the value of these accessories in producing the illusion of spaciousness, quite apart from the mirror's more utilitarian purpose. In any event study is required to determine the proper placing of mirrors. An ill-placed mirror stuck in a dark corner is, from a utilitarian point of view, an abomination and a shame. And one other point before we go: the owner of a motor yacht should always have mirrors of the best quality specified. It does not pay, from any point of view, to introduce mirrors of inferior quality into the furnishing or decoration of a boat, even a motor yacht of small size.

CHINA, GLASSWARE AND SILVER

The most elegantly appointed motor yachts of any size are fitted from table to kitchen with distinctive service. The requirements of the large boat are very much the same as those of the house service, but at the same time space economy is to be thought of, though never should it become apparent. Again elegance and simplicity should be the keynote. But each piece of silver, of china or of glass should seem to belong to the boat it does belong to.

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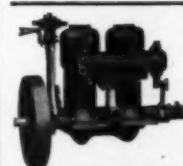
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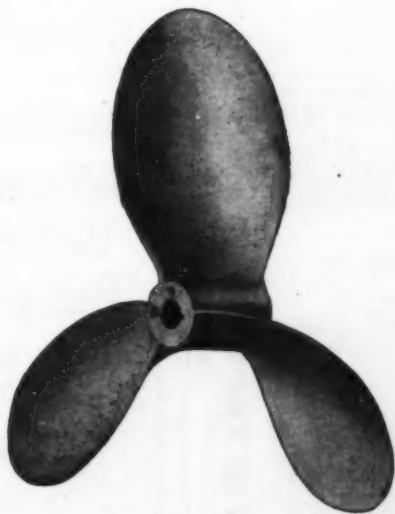
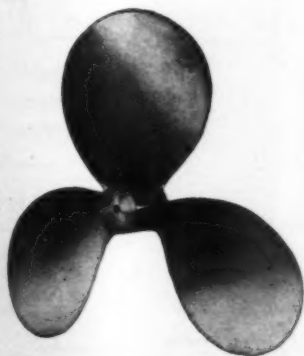
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Without engine\$58 and up
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If you have an engine we will be pleased to install it in one of our hulls.

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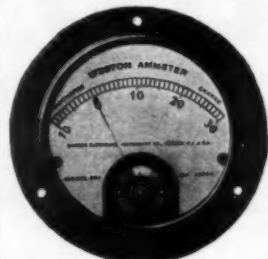
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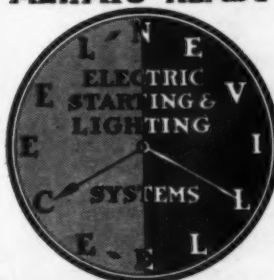
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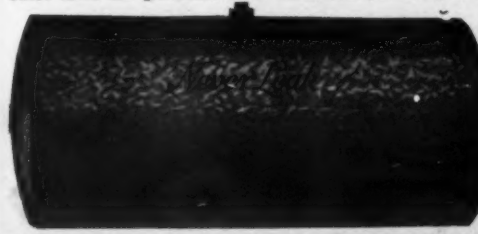
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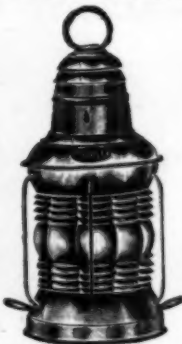


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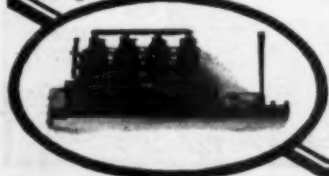
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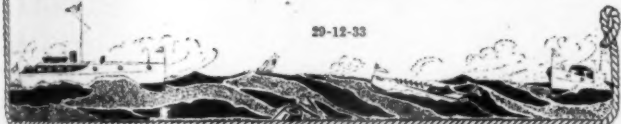
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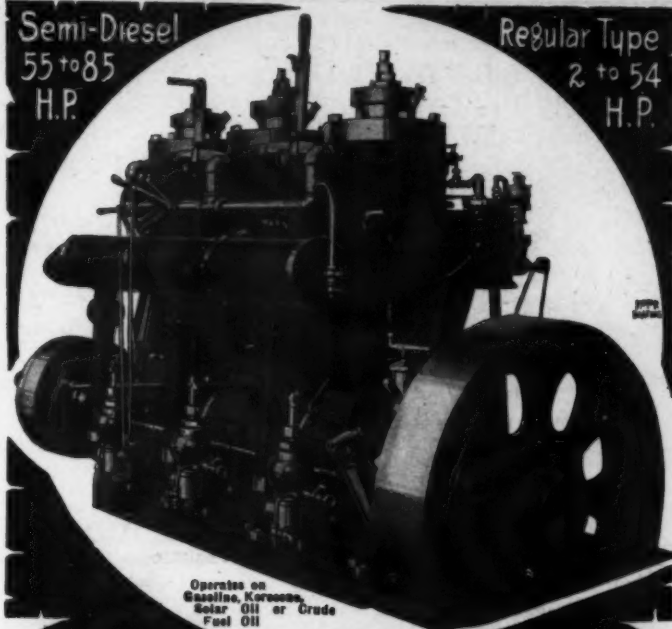
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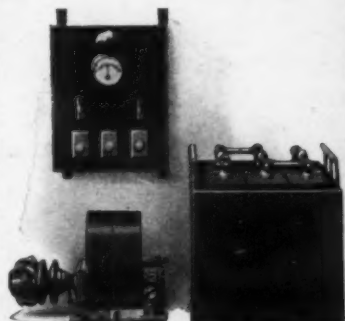
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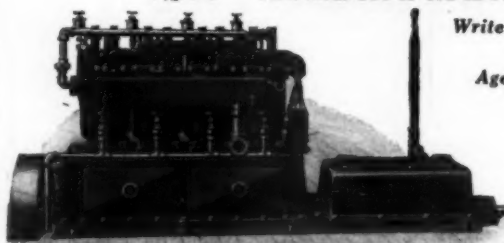
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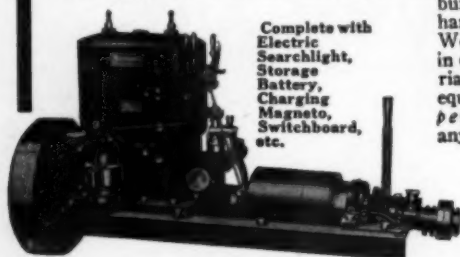
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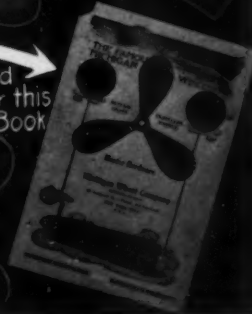
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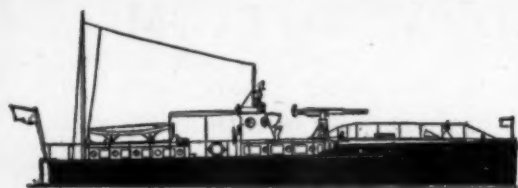
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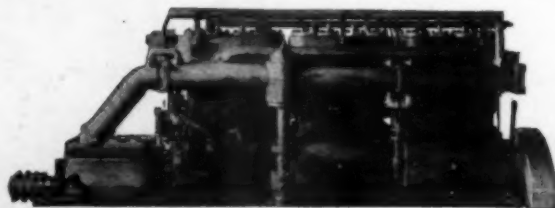
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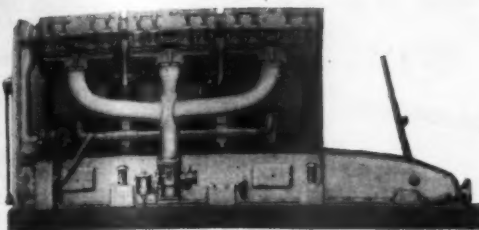
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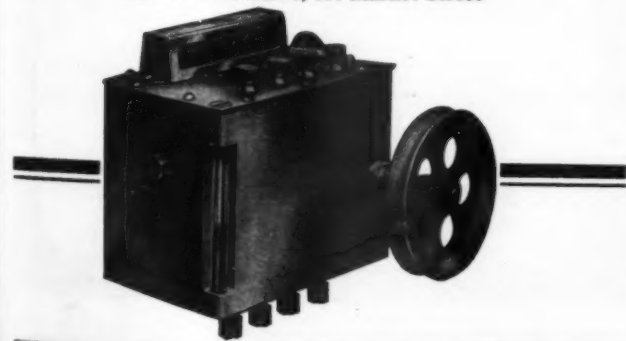
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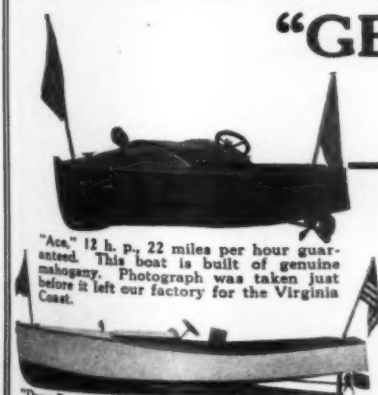
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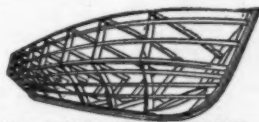
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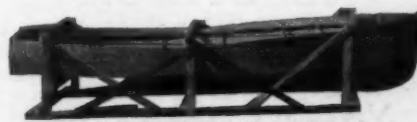
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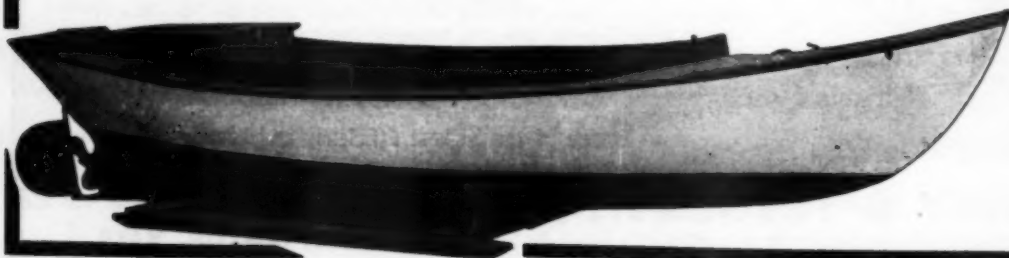
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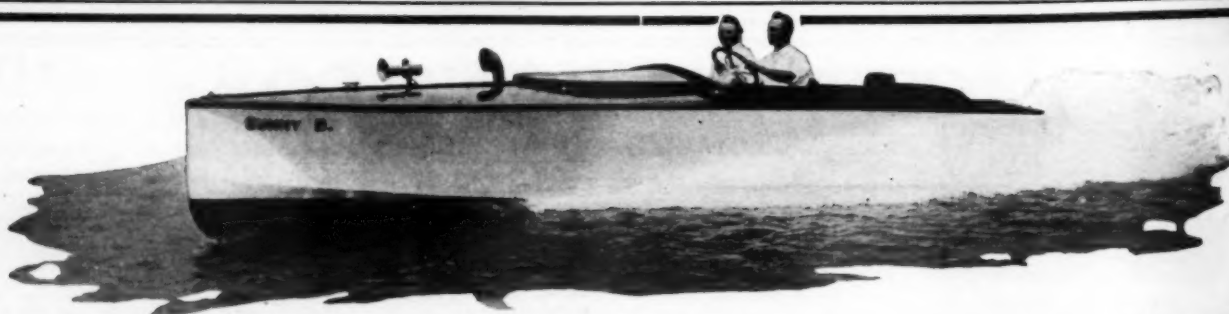
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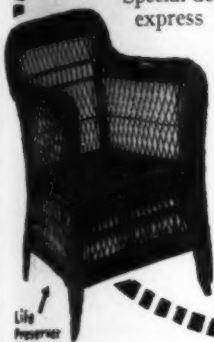
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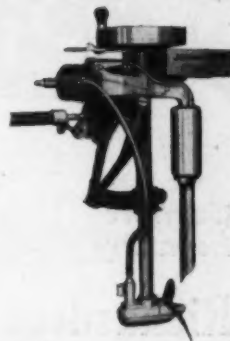
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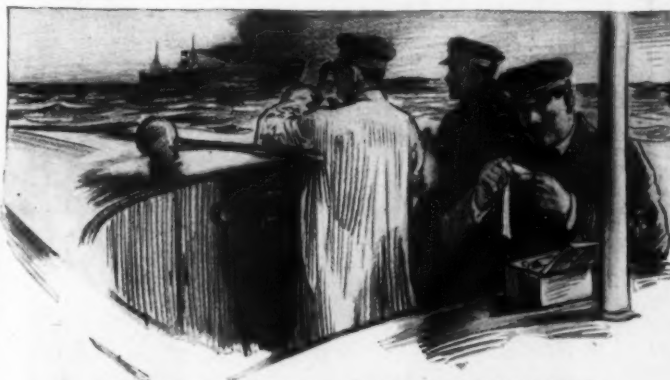
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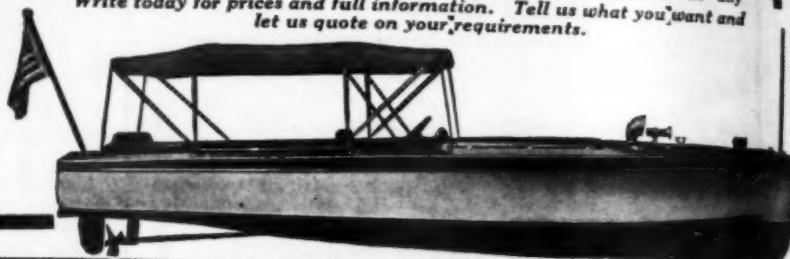
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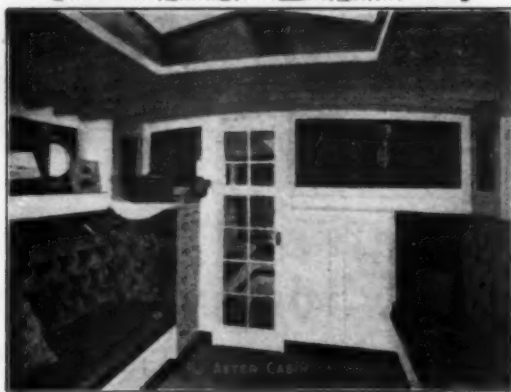
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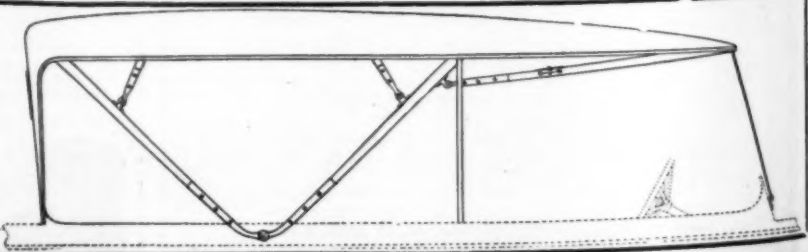
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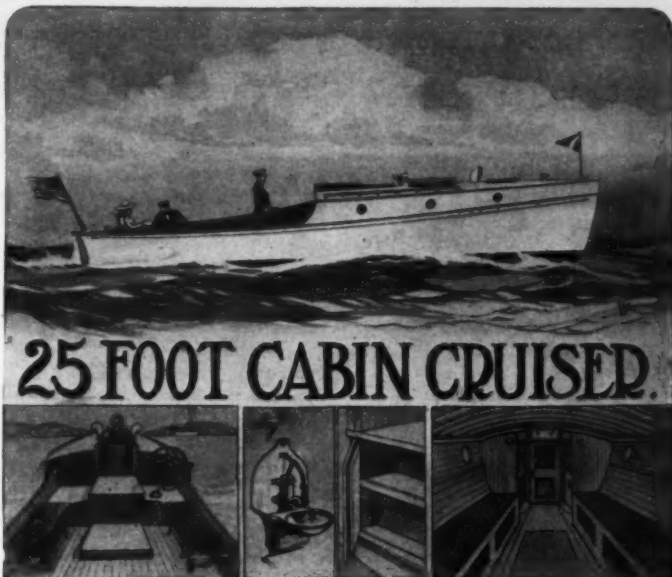
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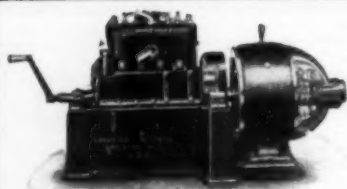
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It pays to use Jeffery's in the first place, every time. Jeffery's is universally conceded to be the best and most reliable marine glue. Jeffery's Glues are specified by the best designers and used by the best builders. A little investigation will show you why.

No. 1—Extra Quality for Deck and Hull Seams of Yachts and Motor Boats. Black, white, yellow or mahogany color. Give black the preference; it is more elastic and satisfactory in every way.

No. 7—Soft Quality for Waterproofing Canvas, for Covering Decks, Tops of Cabins, Canvas Boats, Canoes and Flying Boats. Black, white or yellow. With a coat of paint once a year it will last as long as the boat.

Waterproof Liquid Glue is used for the same purposes as No. 7, Soft Quality. Ready for use and requires no heating; simply open the can and paint it on. Especially recommended in combination with linen between the diagonal of flying boats. Will also attach canvas, cork, felt, rubber, leather, and linoleum to iron, steel, or wood.

Special Marine Canoe Glue. Best Filler for Canvas. Black, White and Yellow. Every canoeist should carry one of our 25c emergency cans. Sent by mail on receipt of 30 cents in stamps.

FOR SHIP'S DECK USE No. 2 First Quality Ship Glue, No. 3 Special Navy Glue.
Put up in 1, 2, 3 and 5 lb. cans; also 14, 28, 56, 112 lb. boxes.

Sold by all Boat and Canoe Supply Houses, Hardware and Sporting Goods Dealers.

Write to-day for booklet "What to Use and How to Use It." It contains a fund of valuable information that every practical boat owner and builder should know.

L. W. FERDINAND & COMPANY, 152 Kneeland Street, Boston, Mass., U.S.A.

WONDER MOTOR

The "WONDER MOTOR" will duplicate on the water the popularity of the Ford car on land.

The WONDER MOTOR has exactly the same dimensions as the Ford automobile engine which is universally conceded to be the most efficient power plant of its size ever built. All important parts are interchangeable with FORD parts.

If you buy a WONDER MOTOR you will never have a moment's delay for replacement parts—Ford parts are carried in stock by Ford agents the world over. And Ford parts are sold at a price that insures economy of maintenance—you can keep the engine as good as new—indeinitely. Any repairman familiar with the Ford Motor will understand your WONDER MOTOR.

The WONDER MOTOR is a sturdy four-cycle marine engine for hard boating service. Does 16 to 20 miles an hour, depending on boat. Improved lubrication. Atwater Kent Ignition. 22.5 H.P. Elbridge quality, for which we have stood for 15 years is maintained in the WONDER MOTOR.

Price \$245

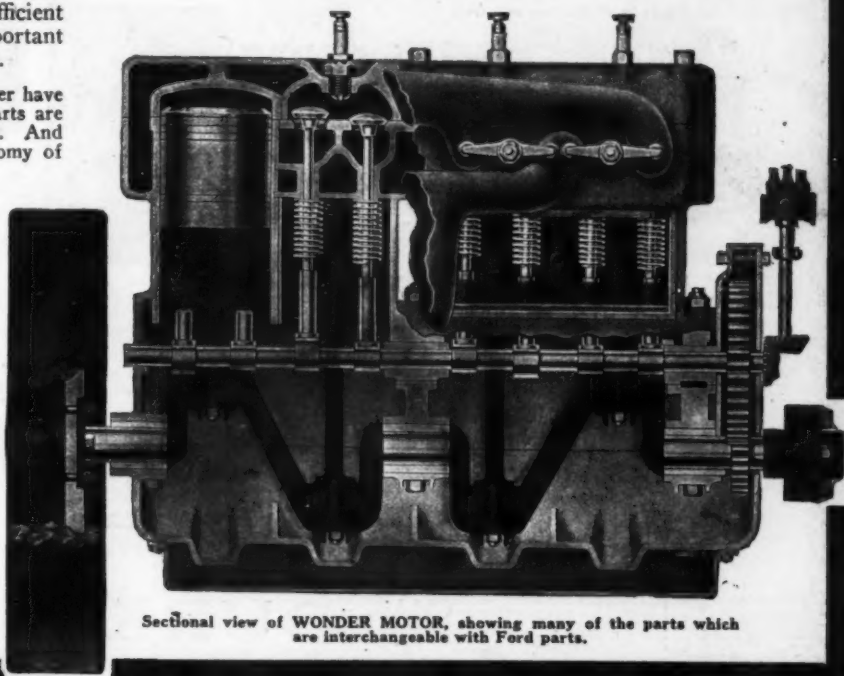
Write for full details of the WONDER MOTOR. We also make high grade two-cycle engines from 3 to 90 H.P., including the famous Elbridge "Featherweight" engines for aeroplanes and speed boats.

Elbridge Engine Co.

328 Main Street, Rochester, N. Y., U.S.A.

Manufacturers of Aeronautical and Marine Engines

**Parts Interchangeable with FORD Motor
Stocked by Ford agents everywhere.**



Sectional view of WONDER MOTOR, showing many of the parts which are interchangeable with Ford parts.



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HERE it is—a Mullins! The boat in the picture is a 26-foot Auto Boat, and like all Mullins boats, it means the most for the money in looks, speed, service and safety. Whether you want to pole, row or motor, in deep, shallow, fresh or salt water, there is a Mullins boat exactly suited to your purpose.

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Advertising Index will be found on page 42.*

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Lanterns and Lights
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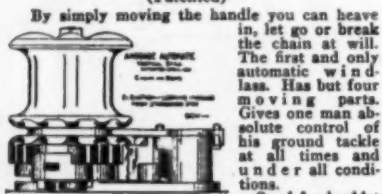


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For Boats 25 Feet Long and Over
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Style No. 5

To handle one chain and one rope

By simply moving the handle you can heave in, let go or break the chain at will. The first and only automatic windlass. Has but four moving parts. Gives one man absolute control of his ground tackle at all times and under all conditions.

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"It is of great value to Owners of Boats and Yachts and in Shipyards for repairing and cleaning vessels, without expense of docking them."

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We carry twenty different kinds—all sizes.

Our Stove Circulars give full particulars of all these makes. Send for one.



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Galvanized with Drop-Forged Shank constructed right from the right material and on right principles. The slightest pull on cable sends shank into position. Shank has ball socket and is cast into head, doing away with need for pin to keep shank from backing out. Can be furnished with round shank to swivel, but we do not advise the use of a Swivel Shank Anchor. All weights from 5 to 200 pounds.

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Its endorsements are immense. It sure is the Anchor with the Bull-Dog Grip. It reduces weight of anchor one-half. Holds on any bottom and buries itself promptly and thoroughly and almost impossible to foul when lying at anchor. Will stand double the strain of any anchor of same weight. Send for Circular. Made from 5 lbs. to 10 tons.



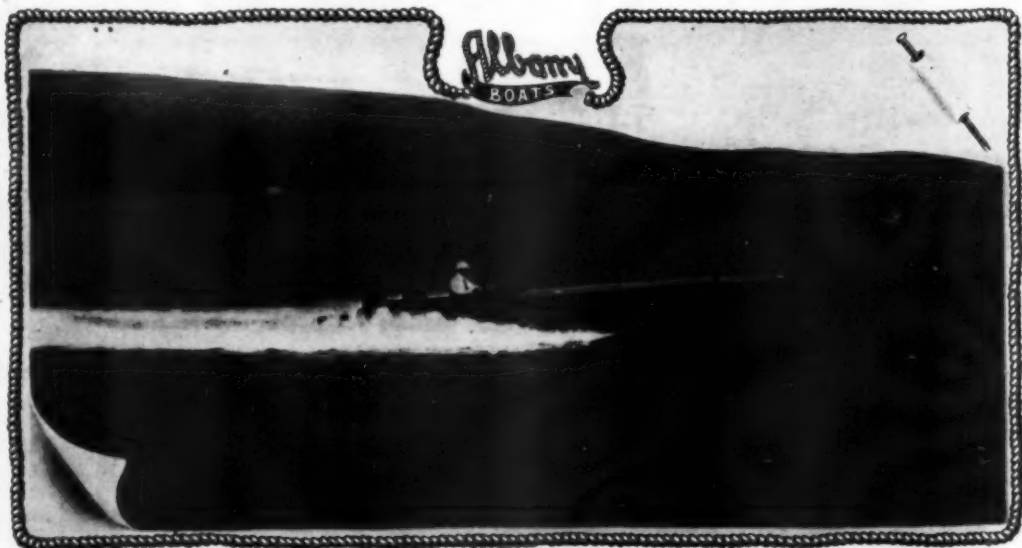
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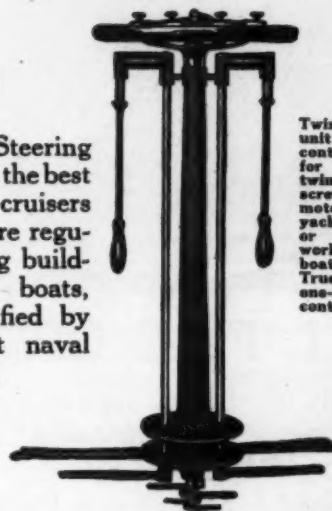
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A shaft or crank pin breaks. Or your engine suddenly goes dead and you fuss and tinker for an hour or more, without a kick of the motor or a sign of life. Up against it right—but if your dinghy is equipped with an

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DETACHABLE ROWBOAT & CANOE MOTOR

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Fire is merciless. It can swallow up your motor boat in a few minutes. All too often it not only destroys—it kills.

The best fire weapon is Pyrene. It is quick death to fire. It stops fire where it starts. It doesn't give fire a chance to grow.

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Every appliance for Fire Protection.

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THE WORLD'S
MOST POPULAR
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The Kingston is today the world's most popular carburetor.

So far as we know we are now producing more carburetors than other manufacturer in this line, and this is not the time of year for our maximum production.

The demand is keeping our plant busy night and day,—and we are the largest carburetor manufacturers in the world.

There is a real reason for Kingston popularity. It is the all-around efficiency of the Kingston Carburetor.

Used on automobiles, marine engines, tractors, motor cycles and for general gas engine work.

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A low priced, efficient battery charger which operates from any 115 volt a.c. lighting circuit.

No further need for worry about your battery getting low.

Put a Tungar in your boat house and be assured of good lighting and ignition.

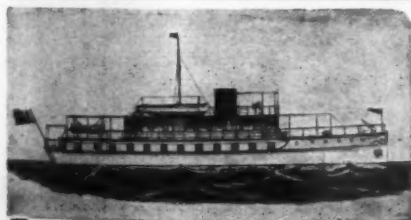
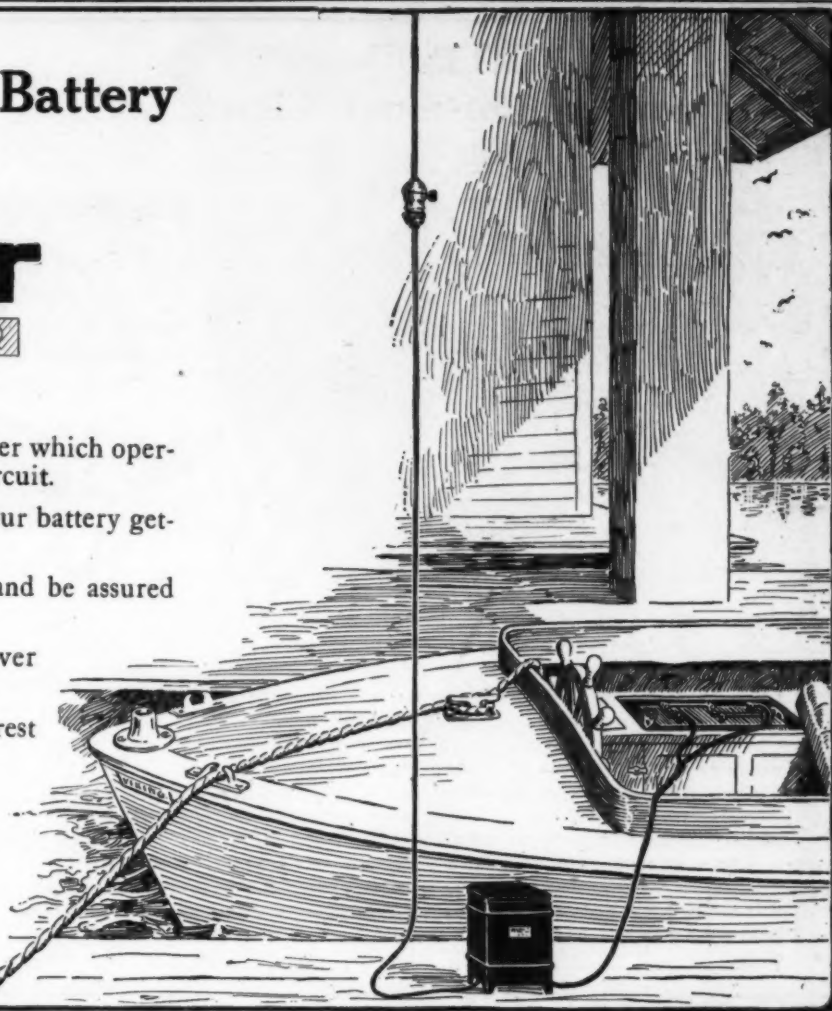
Start your charge and leave it over night—the rectifier will do the rest.

Ask your dealer or write our nearest office for particulars.

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106-FT. CHIEFTAIN—This houseboat was completed in January, 1917 for L. H. and A. W. Armour, Chicago.

SERVICE —that's why!

SERVICE is the one big reason that has led and is leading to the selection of



70-FT. LANAI—Built by us and sold Winter, 1911, through Messrs. Tams, Lemoine & Crane, to Ex. Com. A. C. James, of the New York Yacht Club. Made remarkable showing for sturdiness on maiden trip, despite ice flows and ocean storms.

Mathis-built Houseboats

by men who know. SERVICE that starts at the beginning; that considers no detail settled till it is settled right; that sticks at it till your boat is turned over perfect in every respect. That's the kind of SERVICE that appeals to such men as

L. H. & A. W. Armour, Chicago—

whose 106-ft. houseboat, Chieftain, is now in Florida.

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whose 106-ft. houseboat, similar in many respects to the Chieftain, we will deliver this Spring.

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70-FT. CALABASH—Built by us for Mr. W. J. Matheson, New York, in 1912. Has been among the most notable boats around New York and the Chesapeake Bay ever since.

Does it appeal to you?

MATHIS YACHT BUILDING CO.

Cooper's Point, Camden, N. J.

75-FT. ALELA—Built by us in 1914, for Mr. Albert Disston, for whose father, Mr. William Disston, we created the new type houseboat when we built the Cocopomeo in 1909.



"CURTISS" Improved Motor Boat Closet



Fig. 1404

Dimensions, 18 x 18

Height, 11 inches to top of bowl

For above or below water line. Cylinder heavy brass tubing. All metal parts brass, bowl porcelain, oak seat, varnish finish, nickel plated brass post hinges.

The best little closet on the market to-day possessing many of the advantages of the large size toilet.

When installed above the water line it only requires a seavalue on suction pipe. Its simplicity and ease of installation enable anyone to install it.

The inlet and outlet couplings are equipped with lead pipe cinch unions, making it possible for one to install this fixture without the aid of plumber if desired to dispense with wiped or soldered joints.

Price\$25.00

With Pump



Fig. 1392

Lining and fixtures Nickel-plated. Porcelain Bowl. Mahogany or Quartered Oak Case.

Cock on pump swings upward, thus preventing breaking of bowl. Soap-dish is porcelain and removable.

No. 5—Height, 19 inches. Width, 19 inches. Depth, closed, 6 inches.

Quartered Oak Case.....Each \$42.50

Mahogany CaseEach 44.00

THE J. H. CURTISS CO.

2 SOUTH STREET, NEW YORK, N. Y.

REVOLUTIONARY

Paint Your Motor Boat at $\frac{2}{3}$ ¢ per sq.ft.

ZINOLIN Motor Boat PAINT

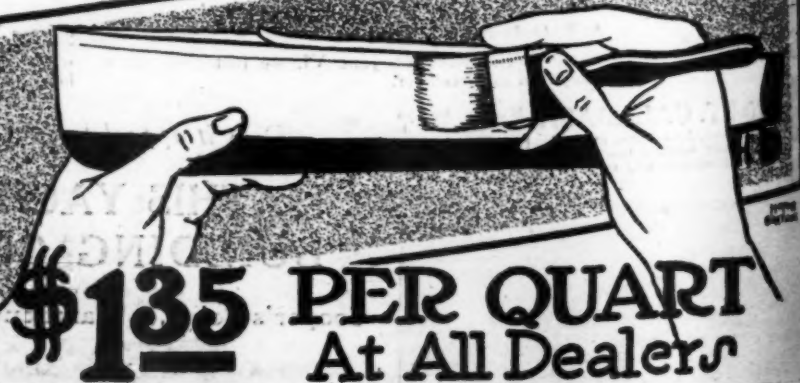
is whiter, lasts twice as long, stands harder wear under foot, gives your boat positive protection because it is 85% ZINC.

No other paint will cover with one coat 175-200 sq. ft. of surface per quart. No other paint meets the trying conditions of salt water and salt air so well. No other paint is so durable. The reason—ZINOLIN is ZINC—especially prepared for any exterior use—and Zinc is the finest, whitest, hardest, most durable paint pigment known—the least susceptible to salt water and salt air climates. ZINOLIN for Motor Boats comes ready to apply. For general house painting it comes like white lead in paste form. Try our Superior Spar Varnish too. If you have any difficulty in obtaining either of these products we will supply you direct upon receipt of price.

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ZINOLIN
Motor Boat
PAINT



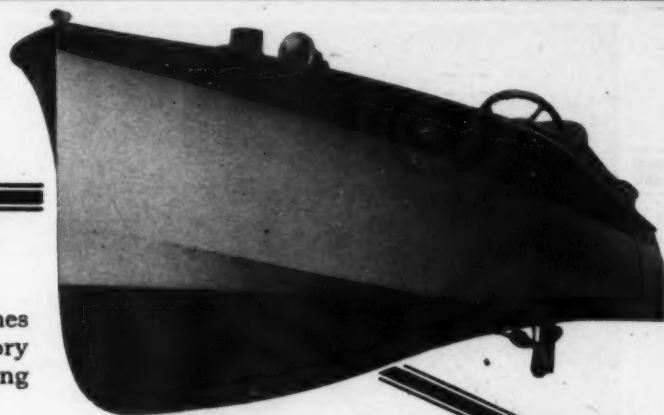
\$1.35 PER QUART
At All Dealers

45 Miles per Hour!

Or 16 Miles per Hour.

Wide variety in Power, Speed and Price.

Speed, beauty and comfort are evident from the lines of this model. Dry, seaworthy, sturdy and satisfactory in every way. If you want the utmost in boating pleasure get one of these



Belle Isle Boats



Two Size Hulls Only

25 x 7
26 x 7.3

V-Bottom Type

Hulls, natural or painted finish as desired.
Choice of Six Power Plants

Sterling
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Prompt Deliveries.

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Your Engine Makes or Mars Your Motoring Pleasure

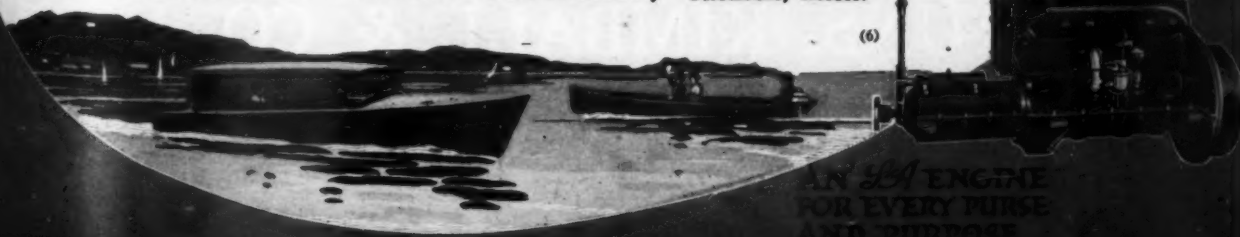
So don't decide definitely on the engine for your boat until you have read the new L-A Engine Book — new — just off the press. It fairly bristles with valuable suggestions and interesting engine information. This new L-A Engine Book describes and depicts in detail the complete line of L-A inboard and outboard motors for launches, row-boats, work-boats, etc. It provides you with complete particulars covering our

30 Days' Trial Plan

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(6)



AN L-A ENGINE
FOR EVERY PURSE
AND PURPOSE



This mammoth Curtiss Hydroaeroplane—the largest flying boat ever built—is varnished with



Pronounced "Cowrie"

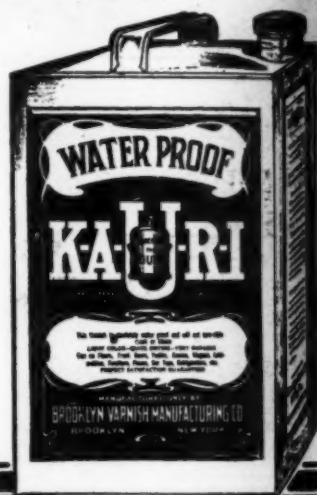
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Manufactured by
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That there will be no advance in the prices of their re-built engines until April 15, 1917. On and after that date they will be compelled to make a material advance in the price of re-built engines owing to the greatly increased cost of materials, supplies and labor.

Take advantage of the present prices on over 200 high grade re-built motors. These prices have not been advanced since the beginning of the War. Here is one thing that you can buy at the old prices if you buy before April 15, 1917. *Do not let this opportunity pass.*

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"The engine and propeller shaft are carefully aligned, but I have found twice the past season on taking my rigid coupling down that it was a trifle out of alignment. Then take my boat going 20 miles per hour in a rough sea—there must be some movement or twist of hull that would make a little whip that a good flexible coupling would overcome."

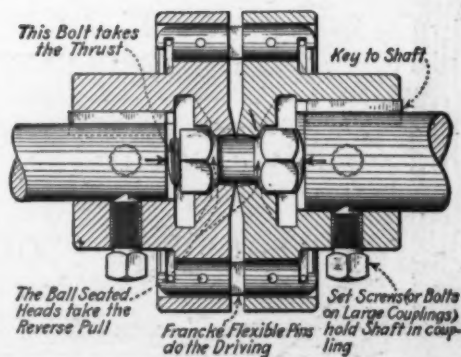
The Remedy—

Francke Flexible Couplings

are installed just like rigid shaft couplings—in place of the rigid coupling—they provide a flexible link between the engine or reverse gear shaft and the propeller shaft—they eliminate friction, hot bearings, leaky stuffing boxes and their use results in better satisfaction and the knowledge that all your power is going into driving force—none into unnecessary friction and shaft binding.

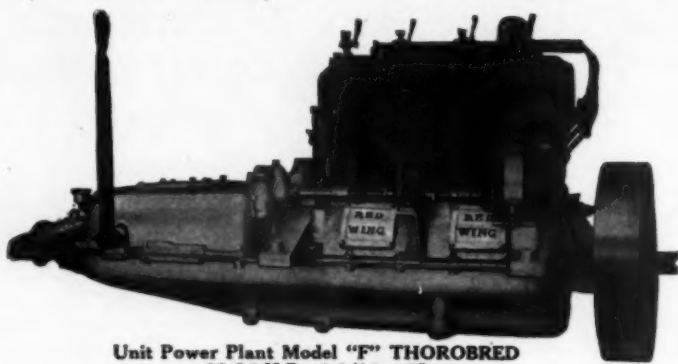
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Red Wing Thorobred

THE MOTOR WITH POWER TO SPARE



Unit Power Plant Model "F" THOROBRED
28-36 H.P., 4 1/16 x 5"
Furnished with or without Unit Power Plant

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The cartoonists remind us aptly it "isn't always the first cost—it's the UP-KEEP." This is particularly true of a marine motor.

If you buy a motor made less carefully or under false economy methods, you pay dearly for it in repairs and wrecked pleasures. You possibly save a dollar or two in the first cost, but we doubt even

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At least be fair with yourself—investigate the Thorobred carefully before you tie yourself up for 1917.

14 to 40 H.P. Speed—pleasure—Work.

You can burn Kerosene in a Thorobred, if desired.

Red Wing Motor Company, Dept. B, Red Wing, Minn., U. S. A.

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Look Better

Last Longer

Crockett's Varnishes have long been the recognized standard in the ship and boat building industry. Prepared especially for the severe conditions of marine service, we believe these specialties are the most satisfactory varnishes which can be used on motor boats and yachts.

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CROCKETT'S SPAR COMPOSITION

The most durable spar varnish ever made. Will not spot, crack, blister, scale or turn white. Unaffected by salt or fresh water.

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A perfect interior finish for boats and yachts.

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A satisfactory floor varnish for yachts. Wears like iron.

Write for our valuable booklet "What to Use and How to Use It." Sent to varnish users free on request.

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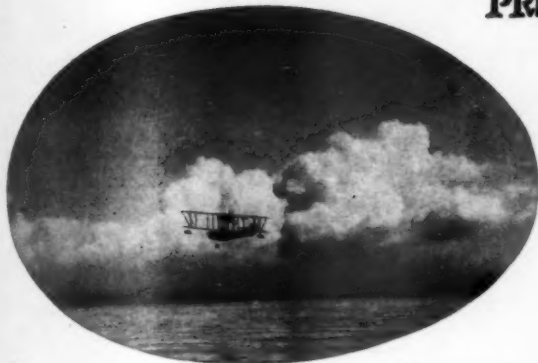
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THE NEW WATER SPORT OF THE SUPERMAN

Instruction
in a General Aeroplane Co's Verville Type
Flying Boat will convert the ardent
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virile man making sport of flying

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CURTISS

Model V-4 12-Cylinder Motor

Specially suited for Hydroplane Work.
Develops 300 H.-P. at 1400 R.P.M.

ON February 13th, this motor drove the Hydroplane "Miss Miami" over a measured course at the rate of sixty-five miles an hour, unofficially breaking the world's record.

Full information and installation drawings furnished upon application to the

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This Year Take Up Flying

The season for out door sports is again at hand. This year you owe it to yourself to give at least a trial to the sport supreme—Flying. With all its thrill and exhilaration, no other sport can rival it.

Standard Airplanes

open up a whole new world to you. And what is more, they offer you reliability on a par with that of the automobile. Try flying; you owe it to yourself. Write us for particulars.

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Kyanize

VARNISH

Waterproof Spar Finish

A YACHTSMAN'S PRIDE

*Is the glistening
smartness of his boat*

Kyanize Waterproof Spar Finish is positively guaranteed to be wear-proof, weatherproof and wetproof—in any climate—under all conditions. It won't turn blue or white in or out of salt or fresh water. It never softens, cracks, chips, checks or peels.

Kyanize White Enamel is recommended by prominent boat builders and preferred by careful boat owners for all whitework on wood, metal or plaster—including all exposed parts. It imparts a glistening, white surface that scoffs at the elements—and is so hard and smooth that it actually adds speed to your boat. Kyanize White Enamel is the whitest, most durable, most economical white enamel made.

If there is no Kyanize Dealer in your locality—write us. We want you to be sure to get the Waterproof Spar Finish and White Enamel that are absolutely guaranteed.

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Makers of Fine Varnishes

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NAVAL NUMBERS

of

Flying April and May

We are on the verge of War! The horrible conflict that has embroiled all of Europe threatens to drag us into the struggle. It is high time that we took stock of our Military and Naval Resources. For the past two years we have been preaching "Preparedness." What are the results?

FLYING is planning special numbers devoted to the Naval Forces of the United States. There will be special articles by Rear-Admirals Fiske, Peary and Little, which will show what the vast mechanical resources of this country can do to save the United States from invasion, and to supply our ships with the means of preventing interference with our commerce.

Attention is being directed to our Coast Defenses, and an article prepared by an authority will explain what steps have been taken in this direction.

In case of war with Germany, the principal work would undoubtedly be that of coping with the Submarine Peril. A special article is being prepared which will explain how it is that the hydroaeroplane can be made the most efficient antidote to the submarine.

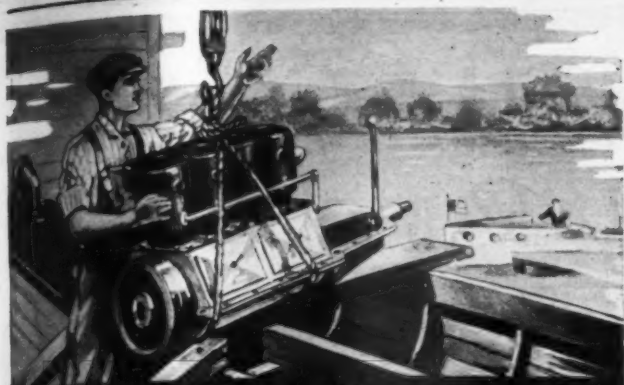
A Call to Patriotism

The aeronautic movement is supported by red-blooded people who believe that the country of Langley, the Wrights and Curtiss and other pioneers should be foremost in aeronautics.

To be progressive you must join the aeronautic movement. Send TWO DOLLARS and be fully informed concerning this most wonderful movement for the next year.

Flying

280 Madison Avenue New York City



When You Overhaul
Install the Genuine

McQUAY-NORRIS LEAK-PROOF PISTON RINGS

To enjoy perfect motor service get McQuay-Norris Leak-Proof Piston Rings because they conform exactly to the cylinder bore and exert absolutely equal pressure all around.

The perfect fit of every ring is insured by the micrometer manufacturing methods, which insure dimensions to within one-thousandth of an inch. The only piston rings obtainable in such a wide range of stock sizes that the repair man can fit your motor immediately, whatever the make or the model.

Don't take chances with poorly designed and cheaply manufactured piston rings. Use only Genuine Leak-Proof Rings. Packed only in this special carton under this copyrighted label; each ring put up separately in this sealed parchment container.

Send for FREE Booklet

"To Have and to Hold Power"—the standard handbook on gas engine compression. Simple, sensible, informative—of great value to anyone who owns or operates any motor or engine. Write Dept. B.

Manufactured by
McQuay-Norris Mfg. Co. ST. LOUIS U. S. A.

Branch Offices:
New York Chicago Philadelphia Pittsburgh
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Canadian Factory:
W. H. Banfield & Sons, Ltd.,
372 Pape Ave., Toronto.



The genuine is packed this
way for your protection

Varnish the real sailor-man uses

A self-respecting sea-going vessel is always kept gleaming with fresh paint and varnish—not only for looks, but for preservation. For when wood begins to decay or metal to corrode, the damage is hard to repair.

Any shipping man will tell you that you save money by keeping the wood and metal on your boat thoroughly protected against water all the time and that it takes good varnish to do it.

Murphy Transparent Spar Varnish

"the varnish that lasts longest"

is a high grade, durable varnish, made expressly for the shipping trade, a most exacting class of purchasers, who know varnish and how long it ought to last. It will keep your boat sound and ship-shape the entire season; it gives complete protection against sea water and changing weather conditions.

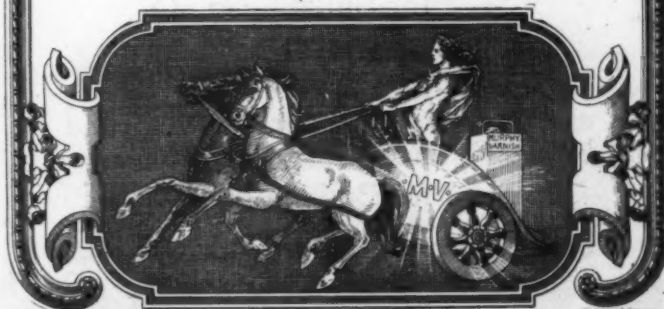
Send for illustrated book: "Beautiful Boats and How to Care for Them."

Murphy Varnish Company

Franklin Murphy, jr., President

Newark New Jersey Chicago Illinois

Dougall Varnish Co., Ltd., Montreal, Canadian Associate





The
Universal
High Class Unit

9-12 H.P., 4-cylinder, 4-cycle motor embodies every desirable feature.

The most popular motor for any type of boat up to 30 feet.

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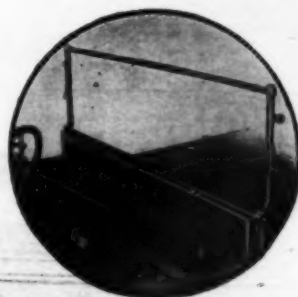
4 K.W. generator set for boat lighting, searchlights, wireless, cooking, etc.; compact and dependable; used by U. S. and foreign governments.

Send for Bulletin No. 20.

Universal Motor Co. Oshkosh, Wis.

NIAGARA

Runabouts



The Most Valuable Motor Boat Improvement in Years is an Exclusive Niagara Feature.

Showing the Niagara Patent Windshield folded down in front of the instrument board, allowing a clear unobstructed passage to the forward deck.

A choice of the world's best motors for your complete ready-

to-run Niagara Runabout makes the selection of a Niagara not a question of motor but of refinements.

As "style leaders" in motor boats we have this year developed a patent windshield which folds completely down in front of the instrument board, allowing free access to the forward deck. Furthermore the top fastens to the permanent frame work of this windshield on the "acorn" principle employed for fine automobile tops, holding it as rigid as the canopy of a cruiser.

This, the most valuable motor boat improvement in years will be found only in the Niagara, along with an instrument board containing everything for the control of the boat within easy arm's reach, even to the regulator for the big powerful searchlight.

The gas and throttle are on the large auto-type steering wheel. The boat is controlled with the feet.

Lockers and ice compartments are underneath the deep comfortably upholstered, divided seats. There's ample passage way between to the commodious rear quarters where graceful wicker chairs, furnished as part of the regular equipment, offer repose.

Many other conveniences and refinements make the Niagara the complete boat, with no extras to buy—a thoroughbred among Motor Boats, fulfilling the discriminating requirements of such men as Percy A. Rockefeller of the Standard Oil Company, New York City, Robert I. Collier owner of the Collier's Weekly, New York City and other figures of national prominence.

\$2300 and up buys a "custom-made" stock Niagara. The latest "V" bottom type is carried as a stock model. Write today for illustrated folder. We have a few boats ready for early delivery but Spring orders must be placed at once, otherwise delays are inevitable.

NIAGARA MOTOR BOAT CO.
210 SWEENEY STREET
N. TONAWANDA, N. Y.





A Mere Youngster Can Run the Koban

The simplest and easiest to operate of all detachable rowboat motors—hence the most efficient, convenient, enjoyable and all-around dependable rowboat motor on the market. That describes

The Great 2-CYLINDER **KOBAN** ROWBOAT MOTOR

In design, construction and operation the Koban is a marvel of simplicity. No complicated parts—no engine "whims"—no adjusting of carburetor—no continual "tinkering."

DOES NOT SHAKE THE BOAT

The Koban is the one vibrationless motor—both cylinders fire simultaneously, neutralizing all shock—which means comfort in riding and saves the boat.

Any woman or child can operate the Koban with ease. Starts easily by simply pressing the button—economical in fuel consumption—special tilting attachment for shallow water and beaching.

From Oak Park, Illinois, comes the report, "My 14-year-old daughter runs my Koban much of the time and has no trouble with it whatever."

A Kobanite at Superior, Wis., writes: "One cold night I forgot to cover my Koban. The next morning I had to wipe the frost off the wheel before I could turn it, but I threw it against compression and got a kick the first time."

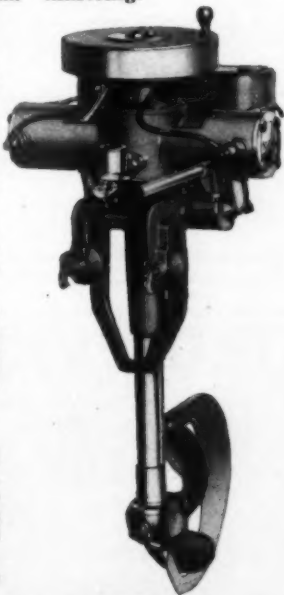
Has no Equal for Speed and Riding Comfort
10 to 12 miles an hour on a good-sized boat is the speed record of the Koban, yet she slows down to a trolling pace when called upon. The vibrationless feature makes riding a comfort and pleasure.

Write for latest catalog showing the new "best-yet" features of the 1917 models.

Dealers or agents wanted near all water-points—Write for details.

KOBAN MANUFACTURING CO., 246 South Water Street
MILWAUKEE, WIS.

Write for Circular No. 80 describing our 2-cylinder, 3 H. P. vibrationless Inboard Marine Engine for small launches, canoes, etc.



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It is impossible to decide intelligently what Varnish or Spar Coating to use, unless you know exactly what work it has to do.

It is well known that the most durable varnish for weather exposure will sometimes turn "whitish" if submerged for several hours, but that on drying it regains its original lustre and will *outlive* other varnishes.

The varnish that dries very quickly is *not* the most *durable* for weather exposure.

On your decks, spars, etc., where it is a question of weather exposure, use

SMITH'S SPAR COATING

It is pale, has good body, and requires fewer coats for a perfect job. *It is the most durable.*

Where it is a question of exposure to water rather than to weather, use

SMITH'S QUICK MARINE COATING

It will not turn white under water, dries quickly, and for this class of varnish is unusually durable. It is made especially for wood and metal work "awash" most of the time and for "hurried" work. It is absolutely reliable. Ask any of the leading designers, builders and owners of yachts and motor boats what they think of Edward Smith's Varnishes.

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SEA SLED

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VIPER SEA SLED

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**Latest Type Sea Sleds for Aviation Division, United States Army**

Able, seaworthy boats, designed for rescue work in open water.

Length, 28 feet. Weight on trials, 7800 pounds.

Two six-cylinder 6" x 6" engines

GUARANTEED SPEED, 35 STATUTE MILES PER HOUR**Speed Shown on Official Trials, 43.54 Statute Miles Per Hour**

Run from Gloucester to Boston, 28 miles, 18 miles of which is open water, in a stiff chop. Army officials aboard. Revolutions, 1200. Time, 48 minutes.

INCOMPARABLY THE FINEST SEA BOATS IN THE WORLD**MURRAY & TREGURTHA CO.**340 West First Street
South Boston, Mass.**THE VIPER CO., Ltd.**Pictou, Nova Scotia
Canada**For Real Sport, Get an "AIRDRIVE"***The most practical type of outboard motor ever invented. You can have no end of sport with this motor, the year around.***Equip Your Boat with an "AIRDRIVE"**

It is the only power plant that will take your boat thru rapids, shallows, and floating moss without danger of breaking the propeller. Especially adapted to shallow draft pleasure and commercial boats. It makes every beach a landing place. "Airdriving" merits your serious thought. Investigate it.

**Kemp Machine Works,**1217 S. Franklin Street
Muncie Indiana

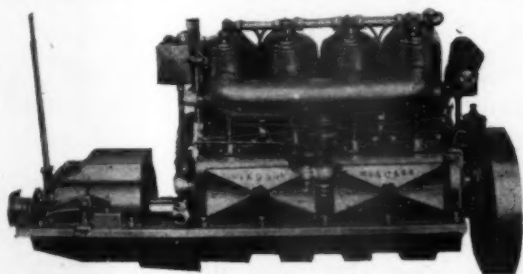
Put "The Power of Niagara" in your Boat

NIAGARA MOTORS

Famous for Their Power and Reliability

Niagara Motors are well known prize winners and record breakers. For years they have been used with extreme satisfaction in big cruisers, commercial boats, racers, passenger boats, auxiliaries, fishing tugs, etc. Their record of successful installations is equalled by only a very few other makers of marine engines.

You are safe when you select a Niagara Motor for your boat.

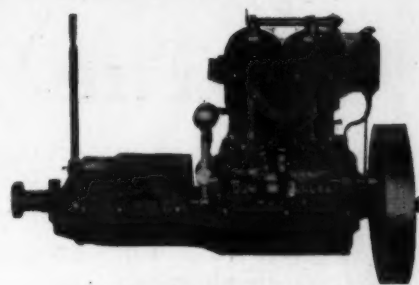


Four-Cylinder Niagara Model D-4.
40 H.P. at 500 R.P.M. 75 H.P. at 1200 R.P.M.

Niagara Motors are built in 2, 4, 6 and 8 cylinder models, from 5 to 175 H.P. They are the ideal motors for cruisers, racers and commercial boats.

Write today for complete description and prices.

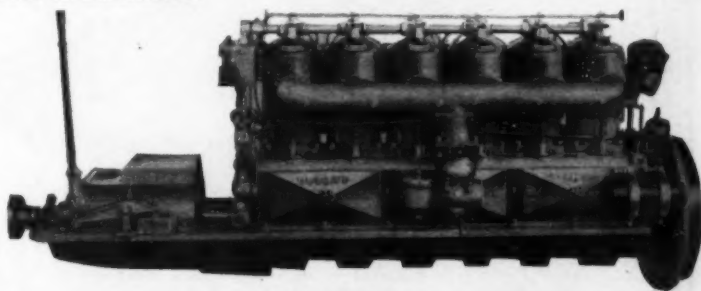
NIAGARA MOTORS CORPORATION
524 Ellicott Square BUFFALO, N. Y.



The Fisherman's Favorite.
5-8 H.P. and 10-14 H.P.
Speeds 100 to 750 R.P.M.

If you could see Niagara Motors in the making, you would realize why they have built up such a reputation for power and reliability. If you could see a few of the letters we have received from their owners you would be even more impressed with the exceptional qualities of these engines.

We have spared no effort to keep up Niagara quality in spite of present tendencies toward cheaper construction and the high cost of materials.



Niagara Model D-6.
Bore 6 1/4". Stroke 7". 60 H.P. at 500 R.P.M. 125 H.P. at 1000 R.P.M.



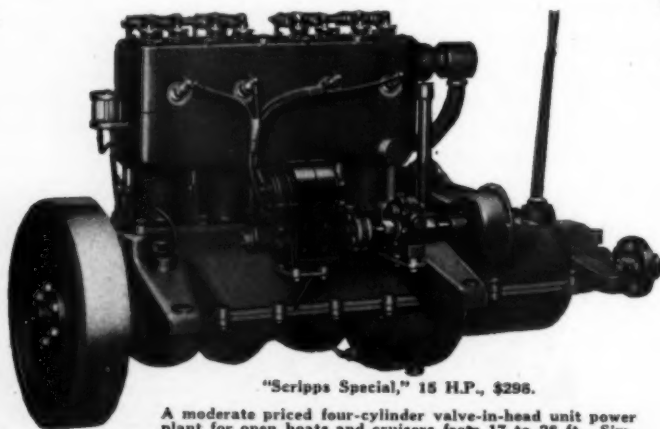
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Bore 8 1/4". Stroke 7".
80 H.P. at 500 R.P.M.
120 H.P. at 750 R.P.M.
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Scripps

The COMPLETE Line of Quality Engines

Next in importance to the well-known quality and reliability of Scripps Marine Engines we consider the fact that the Scripps line is so unusually complete. It includes power plants for every marine purpose and of every size and type, from 10 H. P. to 125 H. P. They are all four-cycle engines, with two, four or six cylinders, medium duty and high speed, some using gasoline exclusively and others fitted for burning kerosene and distillate.

With the exception of the smallest and cheapest launches there is a Scripps Engine for every boat up to 100 feet in length. The same high quality is found in each, no matter what the size or price.

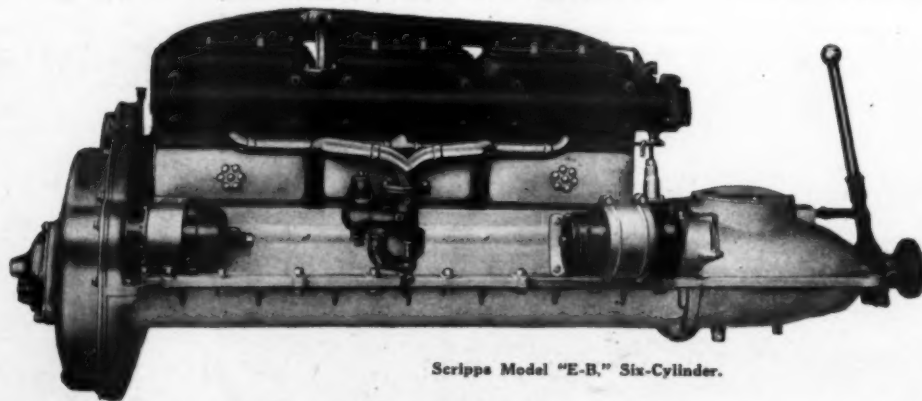


"Scripps Special," 15 H.P., \$296.

A moderate priced four-cylinder valve-in-head unit power plant for open boats and cruisers from 17 to 28 ft. Simple, rugged and economical, it gives exceptional service in medium duty or speed work. Magneto and reverse gear are included at the figure quoted. Weight, 425 lbs.

The Scripps is the one engine which has done more than any other to prove the reliability of the modern high grade marine motor. It is the engine which drove the 35-footer "DETROIT" across the Atlantic, making 6500 miles from Detroit to St. Petersburg.

It is the engine which took Larsen through the Niagara Gorge. It is the engine which has performed exceptional tasks the world over. It has won many contests and trophies, and secured highest honors at the world's great exhibitions.



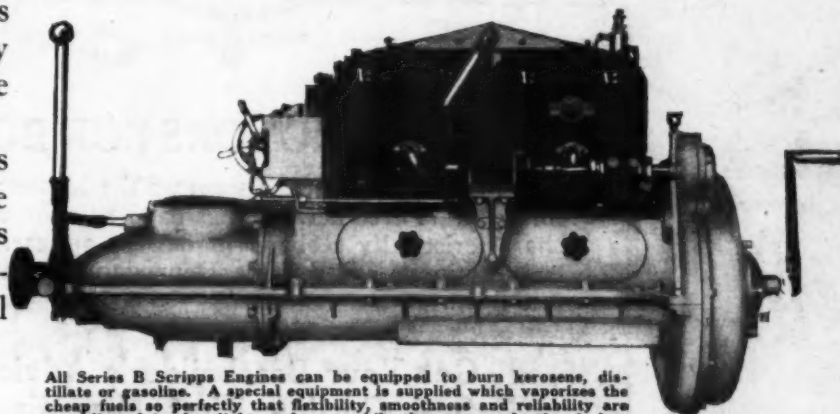
Scripps Model "E-B," Six-Cylinder.

This is the six-cylinder Model E-B engine. Built for a definite purpose—to fill a gap in the six-cylinder ranks—to meet the demand for a high-grade small six having the same superior finish and perfect balance that are usually confined to the largest engine cruiser engines. Every moving part is enclosed.

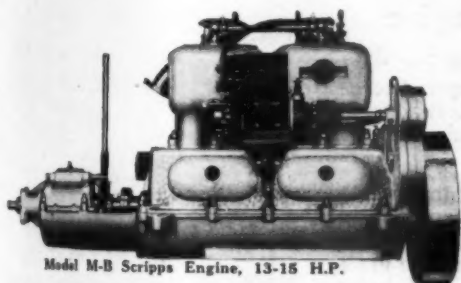
Medium Duty, 40-45 H.P.
High Speed, 50-55 H.P.

Every One a Leader of Its Class

We haven't been satisfied to build merely motors. We haven't taken one design and reproduced the same parts in several different sizes. Each Scripps Engine is designed for a certain type of boat or a certain class of service. Each Scripps Engine is the leader of its class—as perfectly adapted to its use as though it were the only model we were building. For many years the name Scripps has stood for all that is best in the marine power field. This name has never been associated with an unsuccessful engine, and it never will be.



All Series B Scripps Engines can be equipped to burn kerosene, distillate or gasoline. A special equipment is supplied which vaporizes the cheap fuels so perfectly that flexibility, smoothness and reliability are not affected in the slightest degree, while the power reduction is less than ten per cent. We have been building kerosene engines for years and now have more than two thousand in service.



Model M-B Scripps Engine, 13-15 H.P.

Just the engine for life-boats, auxiliaries, small cruisers or work boats. Equipped with kerosene Vaporizer. This vaporizer will be substituted for standard equipment without extra charge or will be supplied as an extra to gasoline motors at a net cost of \$25.00.

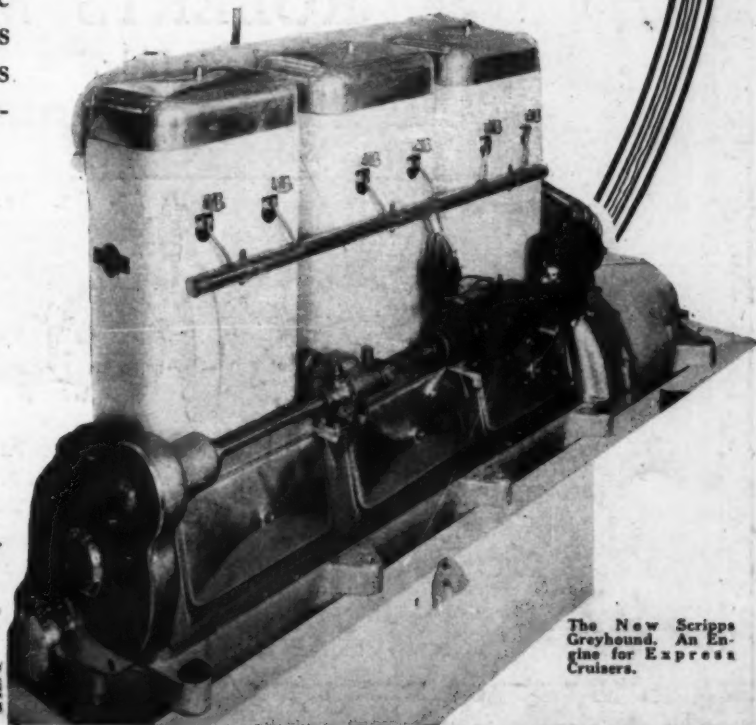
Scripps Engines are used in every country of the world. They are explorers of strange places, pioneers in far-away lands, servants of kings, sportsmen, merchants and sailor-men. Such world-wide popularity would be impossible if these engines had ever failed to give their owners all the service they could expect.

Every model is subjected to actual service of the most severe kind before it is placed on the market. Our engineering department is always working and studying to keep Scripps Engines up to the latest ideas in marine power development.

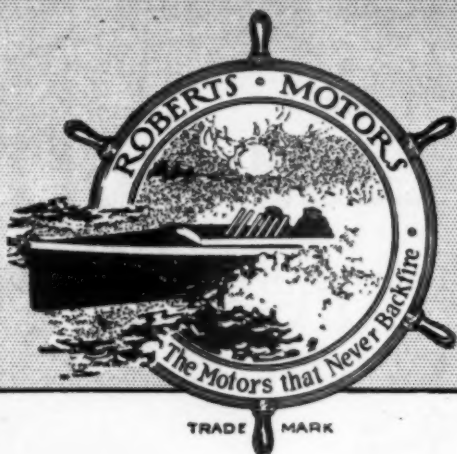
Buy a Scripps Motor this year. Whether you are building a new boat or refitting your present one, if you have a power problem Scripps will solve it for you.

Write today for latest catalog

Scripps Motor Company
631 Lincoln Ave. Detroit, Mich.



The New Scripps Greyhound. An Engine for Express Cruisers.



ROBERTS MOTORS FOR BOATS

More power, more speed sums up the Roberts Motors for 1917. Three new engines have been brought out, characteristically Roberts in design, appearance and construction, with Roberts Dependability built right into them.

Get Your Boatbuilder's Advice Before Getting That New Engine

Your Boatbuilder is the man that knows by experience just what a Roberts Motor will do for you, furthermore, his expert knowledge will enable him to advise you as to the motor best adapted to your boat and the necessary equipment you will require to make the installation complete and efficient.

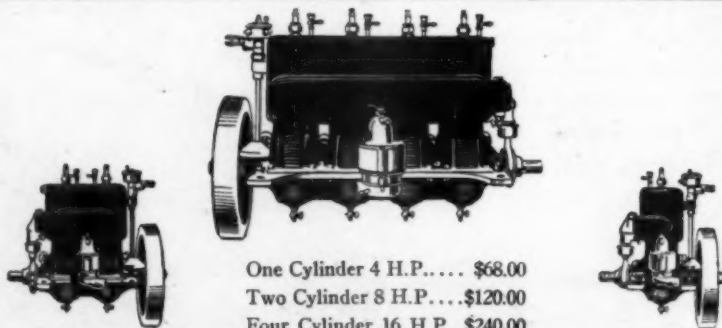
Your Boatbuilder can tell you why Roberts Motors are so free from breakdowns, why they are so safe for the whole family to operate, why you can absolutely rely upon them under all circumstances. He can further tell you why Roberts Motors are more powerful for their size than any other motor and why boats equipped with Roberts Motors usually prove to be the fastest in the neighborhood.

A remarkably complete, attractive and well illustrated booklet has been prepared on Roberts Motors—write for your copy to-day.

ROBERTS MOTORS

1105 Roberts Bldg.

Sandusky, Ohio



One Cylinder 4 H.P. \$68.00
Two Cylinder 8 H.P. \$120.00
Four Cylinder 16 H.P. \$240.00

THE MOTORS THAT NEVER BACKFIRE

PARAGON REVERSE GEARS

Yes, You Can Throw Your Lever In GRADUALLY



THERE'S no jumpy, jerky start when your motor is equipped with a Paragon. No getting under way as if you were hitched behind a skittish horse. The Paragon allows you to get under way slowly, smoothly, gradually.

Its great friction area, obtained by its multiple discs (see arrow), allows your gear to take up its motor's load gradually. You couldn't do this with any other type of transmission without cutting up your friction surface.

See the other refinements of Paragon construction. Note the direct-line drive that transmits your motor's power from your engine gear through four equidistant pinions *direct* to the propeller gear,—no lost power. See the ingenious stop links on the fingers that lock the gear securely in either position.

Better still, ask your friend at the Yacht Club how well his Paragon has served him.

Then look up the standing of the engine builders who use Paragons exclusively. You're safe in following their lead.

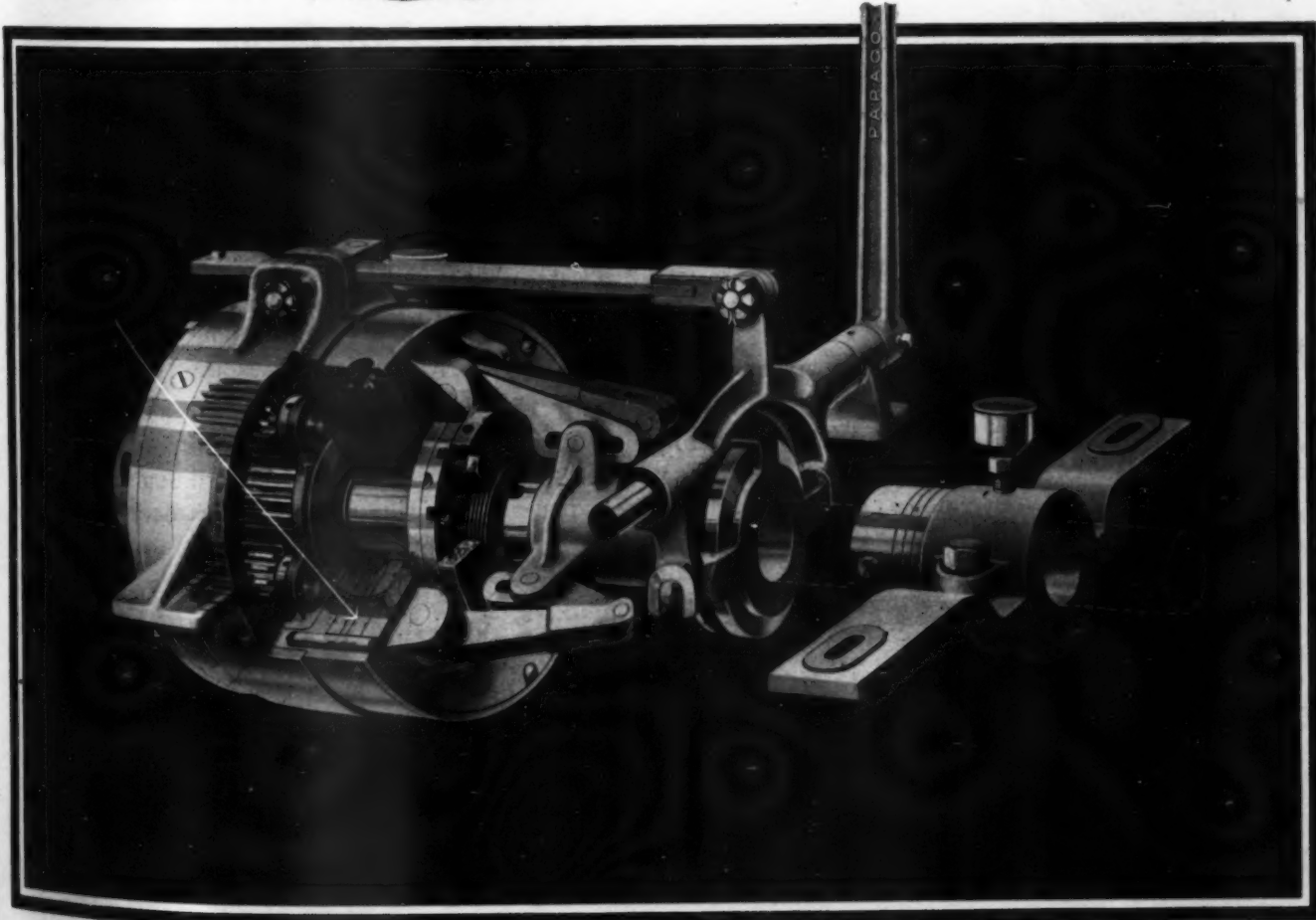
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TAUNTON, MASS.



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Forty Drenching Miles Without a Flutter

"Any engine trouble would have meant the loss of the boat"—

But it was a Ferro Engine

"THE 11 h.p. Ferro bought of you in 1913 (says Dr. W. G. Kiger, Eaglehead, Miss.) has cost nothing for repairs; its waterproof Bosch magneto eliminated all battery troubles, and given gasoline and oil—

It never failed to get there and back.

"It came 40 miles up the Mississippi in one of the worst storms of the year without a flutter—when almost

every wave drenched it from fly-wheel to clutch, and where any engine trouble would have meant the loss of the boat.

"The smaller Ferro (3 h.p.) has cost me for repairs and upkeep, in three years of general use, the price of a timing spool, a few bolts and a couple of gaskets.

"For real service, simplicity and responsiveness to intelligent care the Ferro is, in my opinion, the best marine engine on the market."

Before you buy a marine engine talk to some Ferro owners—and see if they don't say

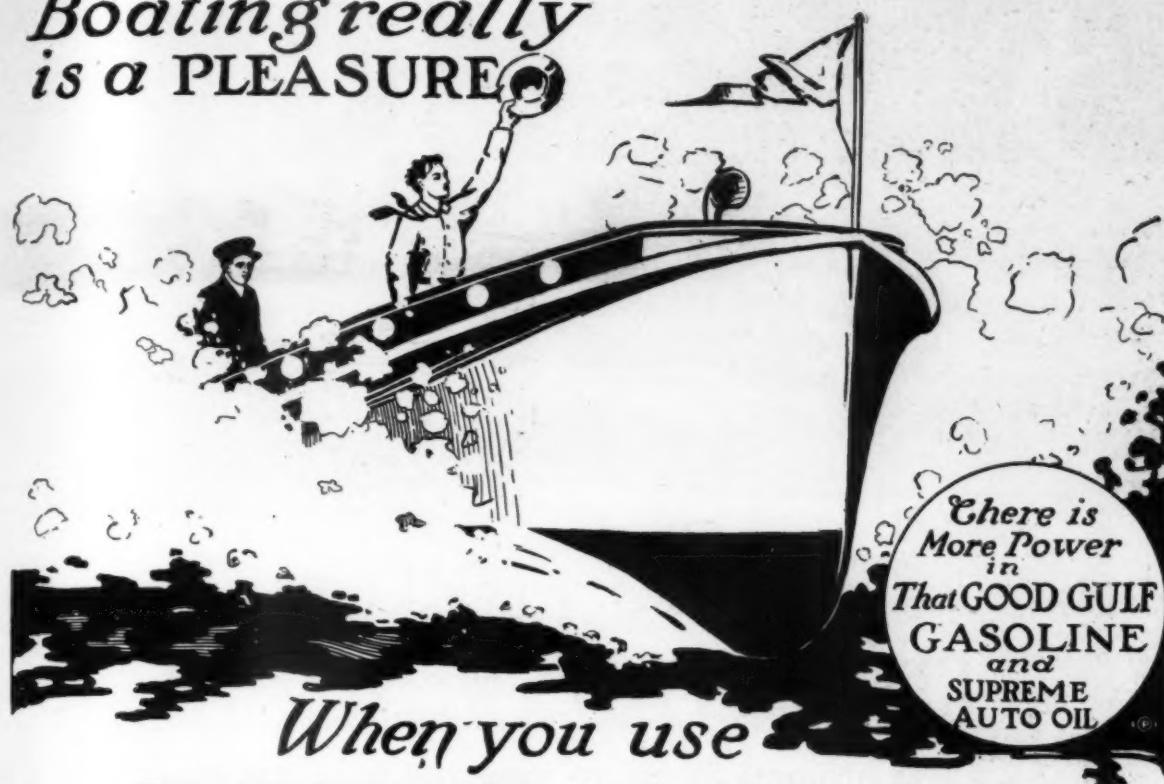
MARINE ENGINES FERRO FOR RELIABILITY

Fourteen models—3 4-cycle, 10 to 50 h.p.; 11 2-cycle (for gasoline or kerosene), 3 to 25 h.p. The Ferro Rowboat Motor, with float-feed carburetor (not a mixing valve) and Bosch ignition is a dependable marine power plant, small enough to be portable. Ask for information about Ferro Engines.

THE FERRO MACHINE & FOUNDRY CO., 410 Hubbard Ave., Cleveland, Ohio

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*Boating really
is a PLEASURE*



When you use
SUPREME AUTO OIL
and
That GOOD GULF GASOLINE

THAT GOOD GULF GASOLINE is straight run, containing no kerosene or casing head mixtures, and carefully filtered for the elimination of any foreign matter.

It is used by the United States Navy in its submarines and all other gasoline propelled craft. This, in itself, is the best evidence of its superior quality.

We feel justified in saying that there is More Power in **THAT GOOD GULF GASOLINE**. More power means more mileage at a lower cost with less carbon, less strain upon your motor and a consequent saving on the general upkeep of your engine.

Put **THAT GOOD GULF GASOLINE** in your tank, and feel the exhilaration of More Power in your motor.

GULF REFINING COMPANY

The Largest Independent Refining Company in the World

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STRENGTH

THE lines of the New Silent Valve-Driggs Marine Engine *express* strength.

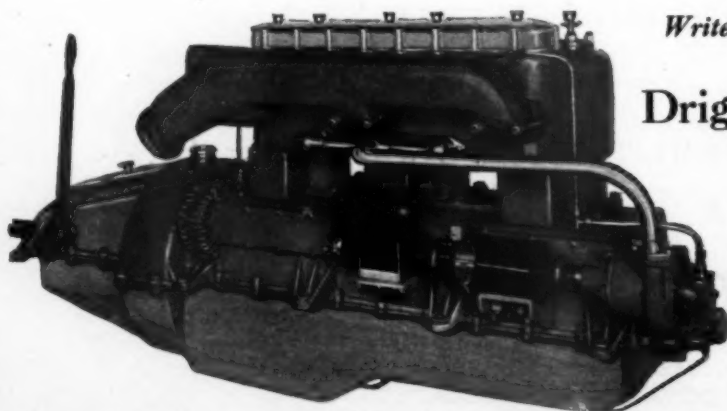
The Chrome Vanadium steel, the toughest and strongest material available for our connecting rods and crank shaft *insures* strength.

The Silent Valve-Driggs Engine is compact. All moving parts are enclosed, yet readily accessible.

Strong in construction, the Silent Valve-Driggs Engine is powerful in action.

The unusually large ports, permitting full intake, and complete elimination of burned gas, make for power, also economy of fuel.

Silence, Speed and Strength are the Driggs fundamentals.



Write for illustrated Catalogue.

Driggs Ordnance Co.

Dept. B

120 Broadway, New York



Preparedness

AT any moment all suitable motor cruisers and speed boats may be taken over by the U. S. Government to aid in the national defense. Proper equipment is an important factor in the efficiency of such a boat. How are you prepared?

Reliable, accurate fuel measurement is absolutely essential for high-speed cruisers and patrol boats. For this purpose we recommend the

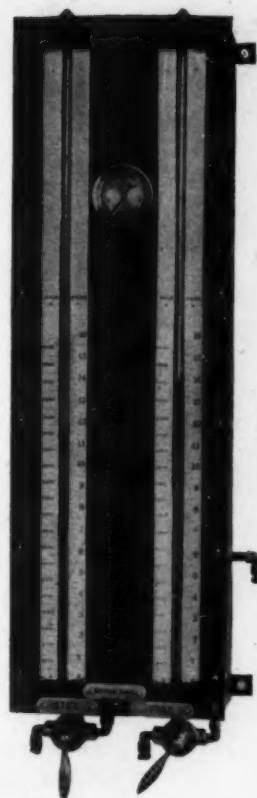
Model M.T. I. Pneumercator

This Pneumercator shows the exact amount of fuel in a tank, recorded in gallons or pounds. The size, shape and location of tanks are absolutely immaterial. The indicators can be installed in the pilot house, captain's room, engine room or wherever desired.

The information constantly at hand is invaluable for the safe and convenient navigation of the boat. It shows the number of gallons actually put into the tanks when supplies are purchased, the rate at which it is being used and the amount on hand at any time.

Pneumercators are now standard equipment on oil burning vessels of the U. S. Navy. They are also used on ocean liners, freighters, motor yachts and cruisers. Allowed by Bureau of Fire Prevention of New York, and Underwriters Laboratories, Chicago.

Other models of the Pneumercator indicate the draft and trim of the vessel.



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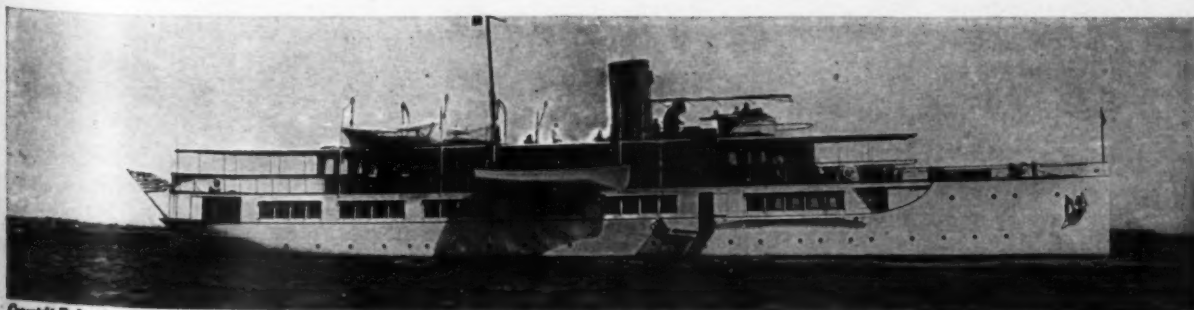
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177-FOOT COASTWISE STEAM YACHT WHILEAWAY EQUIPPED WITH MODEL M. T. I. PNEUMERCATOR

"She's Going Strong"

The 1917 boating season is booming right along. If you have postponed buying

MARINE SUPPLIES

until now—then *you need us*
—*we have the goods.*

Send 20c in stamps for our Catalog No. 102 showing Marine Hardware, Motor Boat Fittings, Yacht Sails, Flags, Awnings, etc. (We refund price on your first order.)

GEO. B. CARPENTER & CO.

440 Wells Street

Chicago, U. S. A.





is the Final Finish for Your Boat

Put it on now and forget painting till next Spring. No cracking, checking, or peeling—no mid-Summer "touching up" with an *Enamolin* finished boat, but a full season's splendid wear *guaranteed* to you by us.

"*Enamolin will make a white spot on any other white enamel.*" It "flows like cream"—shows no brushmarks, can be applied over old paint and when soiled can easily be scrubbed to perfect whiteness with Sapolio and water.

Enamolin spreads much further than paint—*one-half* gallon can gives the average motor boat *two coats*. Any novice can use it.

If your dealer hasn't *Enamolin* in stock and will not get it for you, we will gladly supply it on receipt of price—\$6.00 a gallon (prepaying express on lots of one gallon or more).

EMIL CALMAN & CO.

ESTABLISHED IN 1850

100 William St. New York

Try this "striking test." Send for an enameled panel. Strike it with a hammer.

You can't knock Enamolin off.

Write for Booklet—
"The Enameled Yacht"

Address:
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"SANDS" MARINE SANITARY FIXTURES

A Splendid Assortment of the **Finest Fixtures and Special** to All Others in Quality, Service, **Construction, Appoint** All Over the **World by Discriminating** of the **Vessels. Guaranteed** **ment.**

ties Ever Made. They **are Superior** and are Used **and are Used** **Prompt Ship-**



The "Frisco"—Plate S-2046
(Design Patented—Copyrighted)
The "FRISCO" PUMP WATER CLOSET, extra heavy Vitro-Adamant Oval Hopper Bowl. THREE (3) INCH supply and waste pump. All metal parts smoothed.

Plate S-2045 Polished \$59.00
Plate S-2046 Oak seat 60.00

Dimensions: Width, 24" front to back, 21"; height, 17 1/2". Weight: Net, 80 lbs.; shipping, 150 lbs.



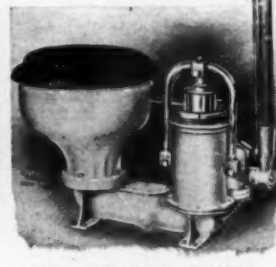
"Iowa"—Plate S-2040
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The "IOWA" Pump Water Closet. Vitro-Adamant extra heavy oval hopper bowl, 4" supply and waste pump. Price with oak seat and cover, pump rough with polished trim. \$85.00
Dimensions: 21" front to back; 23" wide; 19" high. Weight: Net, 80 pounds; shipping, 138 pounds.



"Florida"—Plate S-2015
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The "FLORIDA" PUMP WATER CLOSET with extra heavy oval Padestal Vitro-Adamant Bowl. FOUR (4) INCH combined supply and waste pump with check valve in waste arm. Complete with oak seat and cover pump rough with polished trimmings. \$100.00
Dimensions: 21" front to back, 27" wide, 21" high. Weight: 80 lbs. Net, 125 lbs. shipping.



"Huron"—Plate S-2035
(Patented—Copyrighted)

The "HURON" Pump Water Closet has new style extra heavy Vitro-Adamant flushing rim hopper bowl. 5" combined supply and waste pump. Complete with Mahogany seat and cover. Pump white enamel, N. P. trimmings. \$132.50
Dimensions: 21" front to back, 27" wide, 21" high.



"National"—Plate S-2010
(Patented—Copyrighted)

The "NATIONAL" Pump Water Closet has extra heavy Vitro-Adamant Oval Flushing rim Padestal bowl fitted with 5" combined supply and waste pump. Complete with Mahogany seat and cover. Pump white enamel, trimmings. \$145.00
Dimensions: 26" front to back, 27" wide, 20" high.

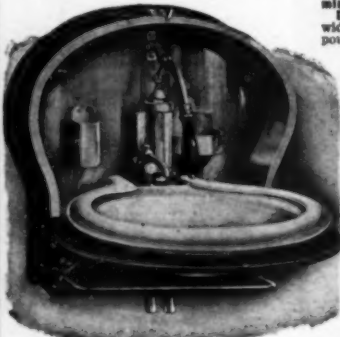


Plate S-153

The "GLENWOOD" Folding Lavatory, with Vitro-Adamant oval basin, N. P. supply fitting, N. P. brass double-acting pump. N. P. brass trimmings. Quartered oak, polished finish. \$42.50

Mahogany, polished finish 44.00

Plate S-152

"CROTON" Folding Lavatory, same as Plate S-153, except with faucet for pressure or gravity supply. Quartered oak, polished finish. \$37.50

Mahogany, polished finish 39.00



"Bow" Closet—Plate S-2050
(Design Patent Applied For)

The "BOW" Closet, vitro-Adamant bowl, 2 1/2" pump, located at rear, fitted with swing handle. Quick opening sunken valve. Space occupied, 18x24". Pump rough, with finished trimmings, oak seat, N. P. \$30.00
Dimensions: Front to back, 25"; width, 14"; height, 12". Weight: Net, 35 lbs. Shipping, 70 lbs.

"Knockabout"—Plate S-34
(Patented—Copyrighted)

The "KNOCKABOUT" Improved Pump Water Closet, vitro-Adamant round flushing rim bowl, 2 1/2" combined supply and waste pump. "Sands" patent automatic safety supply foot valve, and "Sands" patent back-water check valve. Pump rough, finished trimmings, oak seat and cover. \$52.50
Mahogany seat and cover, 1.50
Weight: Net, 45 lbs.; gross, 75 lbs. Dimensions: Front to back, 19" width, 17 1/2" height, 14".

"Winner"—Plate S-2061
(Patented—Copyrighted)

The "WINNER" Pump Water Closet, Vitro-Adamant Round Hopper Bowl, 5" combined supply and waste pump. Plate S-2061 Fixture as described with oak seat. \$19.00
Plate S-2061 Fixture as shown with oak seat and cover. \$20.00
Dimensions: 20" front to back; 25" wide, 18" high.
Weight: 36 lbs., net; 68 lbs., shipping.

Plate S-145

The "HOBSON" Vitro-Adamant Folding Lavatory, N. P. brass combination self-closing faucet for hot and cold water, and towel rest. Complete. \$45.00
Weight: Net, 45 lbs.; gross, 75 lbs. Dimensions: Height, over all, 24"; width, 16 1/2"; depth, open, 11"; depth closed, 7 in.



Plate S-3183

The "MANATEE" 18" Vitro-Adamant Flat Back Lavatory, with N. P. Basin Pump and waste fittings; no trap. \$23.75

Plate S-3180

The "MENARD" Lavatory, same as Plate S-3183, except with faucet instead of pump and with N. P. Full "S" Trap. \$14.25

Plate S-131

The "Caritas" Brass Outlet Connection, Iron Pipe: 1/2 in. \$1.75
1 in. 2.50
1 1/2 in. 3.75



Plate S-709

All Brass Galley Pump, 1 1/2" Cylinder, reversible handle with shut-off cock. Polished. \$9.50
N. P. all over. \$16.50



Plate S-771

Brass Gasoline and Oil Pump with special valves. Dia. 1 1/2. \$5.00
1 1/2 in. 7.00
2 in. 13.00



Plate S-750

Double Acting Brass Auto Bilge Pump, 15 inches long under spout and fitted with 5 feet of rubber hose. No. 1—1 1/2" diam. \$3.00
No. 2—2 1/2" diam. 4.50
No. 3—3 1/2" diam. 7.25
Long, with foot rest, \$5.50



Plate S-4300

Same as above but also fitted with adjustable foot rest. \$6.25

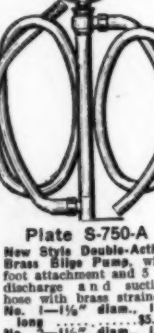


Plate S-750-A

New Style Double-Acting Brass Bilge Pump, with foot attachment and 5 ft. discharge and suction hose with brass strainer. No. 1—1 1/2" diam. 15" long. \$3.00
No. 2—2 1/2" diam. 15" long. \$4.50
No. 3—3 1/2" diam. 24" long. \$7.25



Plate S-3190

The "MOOSE" 12" Vitro-Adamant Corner Lavatory with N. P. Brass Pump and waste fittings and N. P. Full "S" Trap. \$25.50

Plate S-3196

The "Moose" Lavatory, same as Plate S-3190, except with faucet instead of pump and without trap. \$18.25

Plate S-130

The "After" Brass Inlet Connection, Iron Pipe: 1/2 in. \$1.75
1 in. 2.50
1 1/2 in. 3.75



Plate S-127

The "Grandy" Round Way Sea Cock. For large closets. Price: 1 in. \$4.00
1 1/2 in. 5.50
2 in. 11.00



Plate S-1001

Round Frame Compartment Port Light, with one clamp, for wood vessel. Dia. Pl. Pol. Dia. Pl. Pol. 3" \$2.50 \$4.00
4" 2.75 4.25
5" 3.15 4.60
6" 3.60 5.00
7" 4.00 5.40
8" 4.50 6.00



Plate S-5202

Universal Polished Brass Hose Lead. 1/2 in. \$0.35
3/4 in. \$0.40
1 in. \$0.50
1 1/2 in. \$0.75



Plate 1303-B

Cast Bronze Raised Strainer. 2 1/2" \$0.35
3" \$0.40
4" \$0.55
5" \$0.70
6" \$0.85
7" \$1.00
8" \$1.25



Plate S-130 1/2 B

Cast Bronze Strainer and Scoop used over inlet to engine. Made in three sizes and packed with screws. 2 1/2" x 3 1/2" \$0.85
3" x 4" \$1.00
3 1/2" x 5" \$1.25



Plate S-975

Lead Pipe. Size: 1/2 in. \$0.60
3/4 in. \$0.70
1 in. \$0.80
1 1/2 in. \$1.20
2 in. \$1.50



Plate S-126

The "Glass" Corner Lavatory with faucet. Price: 3/4 in. \$2.25
1 in. \$2.50
1 1/2 in. \$3.25
2 in. \$4.00

Complete line of closets, lavatories, and specialties described in NEW Catalogue "R" ready in near future, sent free on request.

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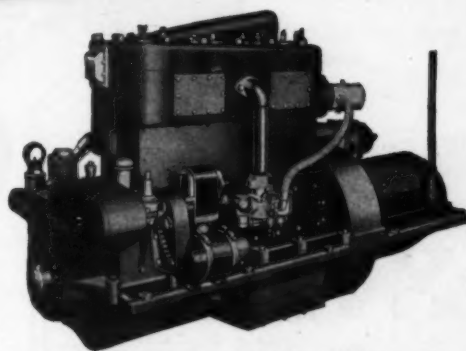
Miller

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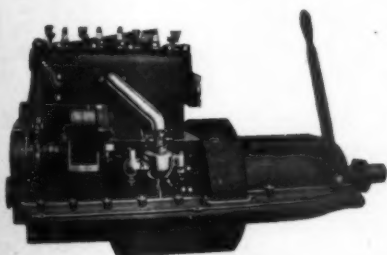
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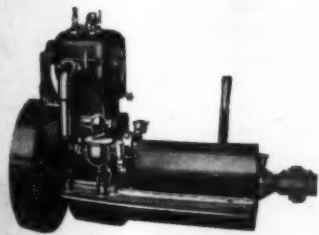
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The more you investigate the record of Miller Motors, the more you will appreciate the value of our common-sense policy. We don't try to see how many motors we can build and how cheaply we can sell them. We try only to build a motor that will pay for itself by performing steadily in many years of hard service.

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Moreover there is a Champion Plug especially designed to meet the requirements of every type of marine engine.

Every dealer carries Champions. Insist upon them when it is time to overhaul your boat.

See that the name "Champion" is on the porcelain—not merely on the box.

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Heavy Stone
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Gives a high-gloss, oil-proof finish to marine engines and machinery. Ready for use in six durable colors.

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THE new "Peerless" Fishing and Work Engine was designed to meet the ever-growing demand for a good four-cycle engine of moderate power in both a single and two-cylinder model. Throughout the entire design and construction of these engines we have had but one object in view, namely to produce a machine suitable for work purposes. Their sturdy design, accessibility, simplicity and economy in fuel consumption will immediately appeal to the man who has to depend upon the reliability of his engine to gain a livelihood. We well realize that a successful work engine must be ready for service regardless of weather conditions and we firmly believe that these new models will prove to be the most reliable and economical work engines on the market.

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Crank Shaft extremely large with a bearing between each cylinder. Crank shaft can be easily removed from front end of crank case.

Cylinders are cast separately of the best grey iron, every heated part thoroughly water-jacketed. "L" head type.

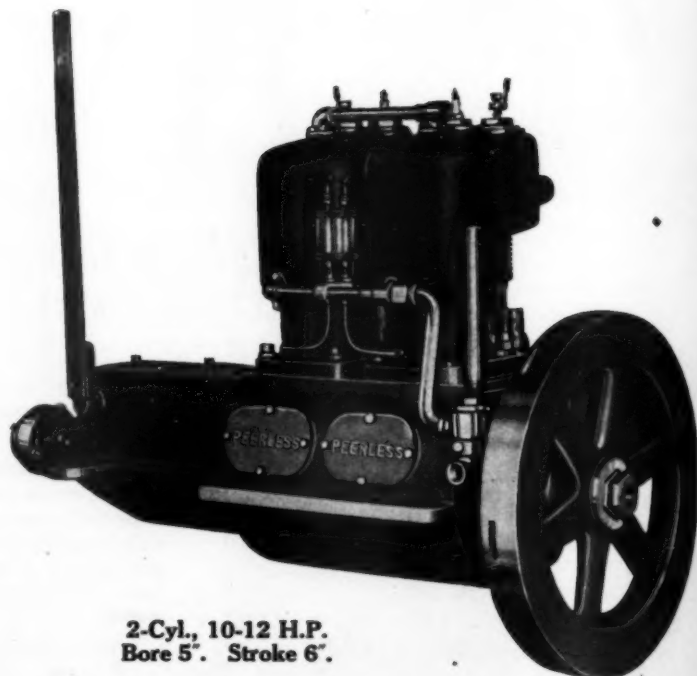
Crank Case of the barrel type with a large hand-hole on each side allowing perfect accessibility for inspection and adjustment.

Water Pump is of the plunger type, having an extremely large capacity. Pump and all fittings are of bronze.

Bearings are of babbitt die cast and interchangeable. All bearings can be replaced without removing cylinder or breaking exhaust or water connections.

Timing Gears and Cam Shaft Gears are of cast iron and bronze entirely enclosed, cam shaft of steel with separate cams secured with Woodruff keys and pins.

Manifolds are cast integral, making it possible to thoroughly heat the incoming gases. This adapts this engine to the successful use of kerosene or distillate.



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Bore 5". Stroke 6".

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Whether a cabin cruiser, fast motor boat, or just plain "kicker," the speed is bound to be cut down as the season progresses, unless you take definite action now to forestall fouling.

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Its anti-fouling properties maintain clean bottoms.

Its elasticity and toughness means longer life—no peeling, chipping or cracking. This, combined with its waterproof quality, makes it a real preserver of boat bottoms.

Being elastic to a certain degree, Parapaint fills in the joints, conforms to twisting or straining, and maintains an unbroken film over the entire boat bottom.

Its smooth surface is also an advantage in reducing water friction.

Parapaint is also used to waterproof and preserve wooden or canvas decks. It comes in all standard colors, excepting snow white, according to your requirements.

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We believe no sale is ever complete until the buyer has obtained full satisfaction. Therefore, we stand back of Parapaint with a rockbound guarantee:

"Absolute Satisfaction or Money Back."

Use Parapaint on your boat this spring. Get the benefit of it during the whole season.

Then examine the bottom, or the deck, or wherever you use it. If, for any reason, Parapaint has not given complete satisfaction, write us and get your money back.

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We will make recommendations (Parapaint comes in several consistencies), and furnish costs—which, by the way, are comparatively low.

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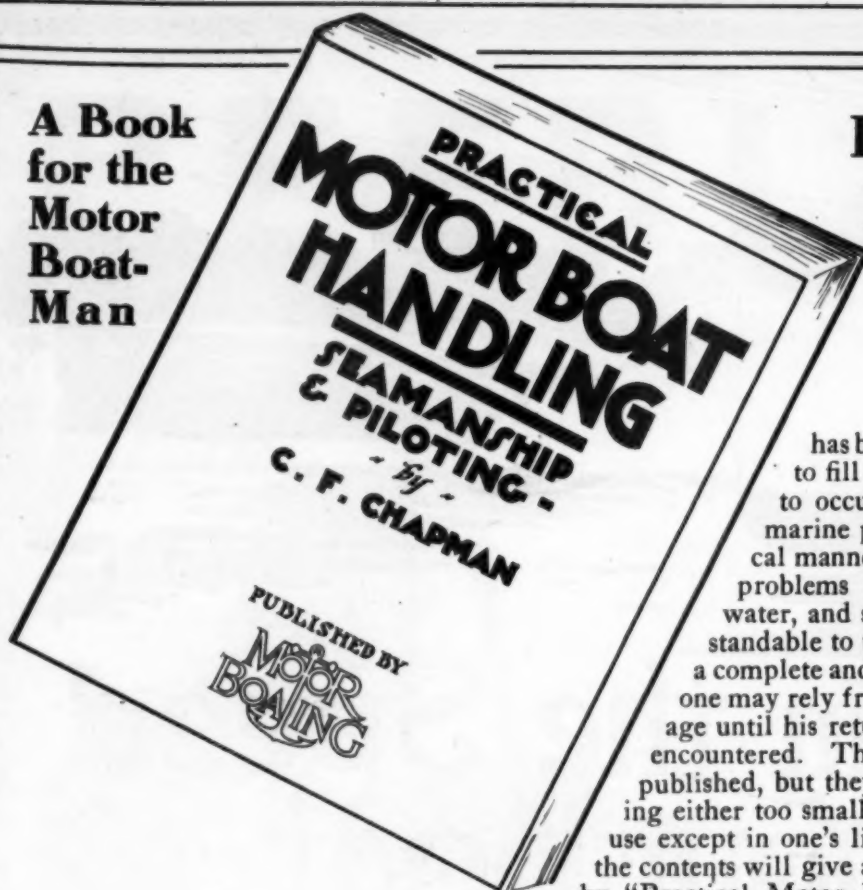
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The Compass
Points and Degrees
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Tides and Currents
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Navy Code

This is only a very small part of the subjects covered in this book; lack of space prohibits the complete list. Commodore C. F. Chapman, the author, has done a great work in writing this important volume, which will give every one the benefit of his long experience.

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Every owner of a motor craft may be called upon some time to do his share toward the defense of his Country. Not on his own boat, perhaps, but to help man the thousands of motor boats which will be required to patrol and defend our sea-coast.

If you believe in preparedness then begin now to study those things which you must know in order to efficiently handle a motor craft for defensive purposes.

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Simply go over the bright work on your boat occasionally with a piece of cheese cloth moistened with Liquid Veneer. In this quick, easy and inexpensive way you will preserve the brightness and newness of the varnished and other polished surfaces, and save the cost of revarnishing and refinishing. But be sure you use

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Liquid Veneer supplies to the varnish that which is lost through exposure. It prevents cracking and drying out, preserves the original lustre and smooth, even surface. It also cleans as if by magic, and removes spots, stains, smears and dirt. It even gives a polish of beauty to old, worn out surfaces that is truly astonishing.

Many an old, dull-looking boat has been restored to brightness and new charm by simply applying Liquid Veneer to the bright work. It dries instantly, leaves no coating, is NOT AN OIL, is not inflammable and non-explosive.

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SPECIAL OFFER: For a limited time only, we will supply, free, and all charges prepaid, a 25c Crepette Dust Cloth to every purchaser of a \$1.00 quart bottle of Liquid Veneer. (Contains nearly three times as much as the 50c size.) Slip a dollar bill into an envelope and mail today. A \$1.00 bottle often means a saving of \$100.00 in refinishing.

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Do You Desire Real Independence?

When you step to the steering wheel of your own Gray powered motor boat you become the ruler of a little kingdom all your own. No longer must your boating be limited to the invitations of friends and the fixed route and fixed schedule of crowded noisy passenger steamers. You have a new independence, and have found the key to health, happiness, and relaxation. The ideal vacation is yours.

To make this certain your engine must be a joy-bringer; not a joy-killer. That is why you should own a Gray. It's a motor of quality, reliability, and efficiency. It costs you little at first and less afterwards. The Gray is not a heavy drinker. It seldom requires even minor repairs. It does not wear out. It is permanent.

TWO BIG GRAY HELPS—NEW.

Select your boat from our 1917 Boat Builders Catalog, showing products of 200 leading boat builders. Select your engine from our 1917 complete engine catalog, containing full details of every GRAY engine. Both books just out. Both FREE. Send at once.

"There's a Gray for Every Boat."

Gray Motor Company

436 Oakland Avenue, - Detroit, Michigan



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Advertising Index will be found on page 42.

JOHNSON'S GUARANTEED CARBON REMOVER

IS A HARMLESS LIQUID, to be poured into the cylinders of gasoline and kerosene engines. It softens the carbon and releases it from the metal. It then burns, powders and is blown out through the exhaust. Five minutes' time and no labor required. You will save from \$3.00 to \$5.00 over any other method, without loss of time and with very much better results.

Put New Life In Your Engine

A dose of Johnson's Carbon Remover—the engine laxative—will increase the power of your boat—stop that knocking sound—prevent pre-ignition—quiet your motor and reduce your gasoline consumption from 12% to 25%.

For Automobiles and Motorcycles

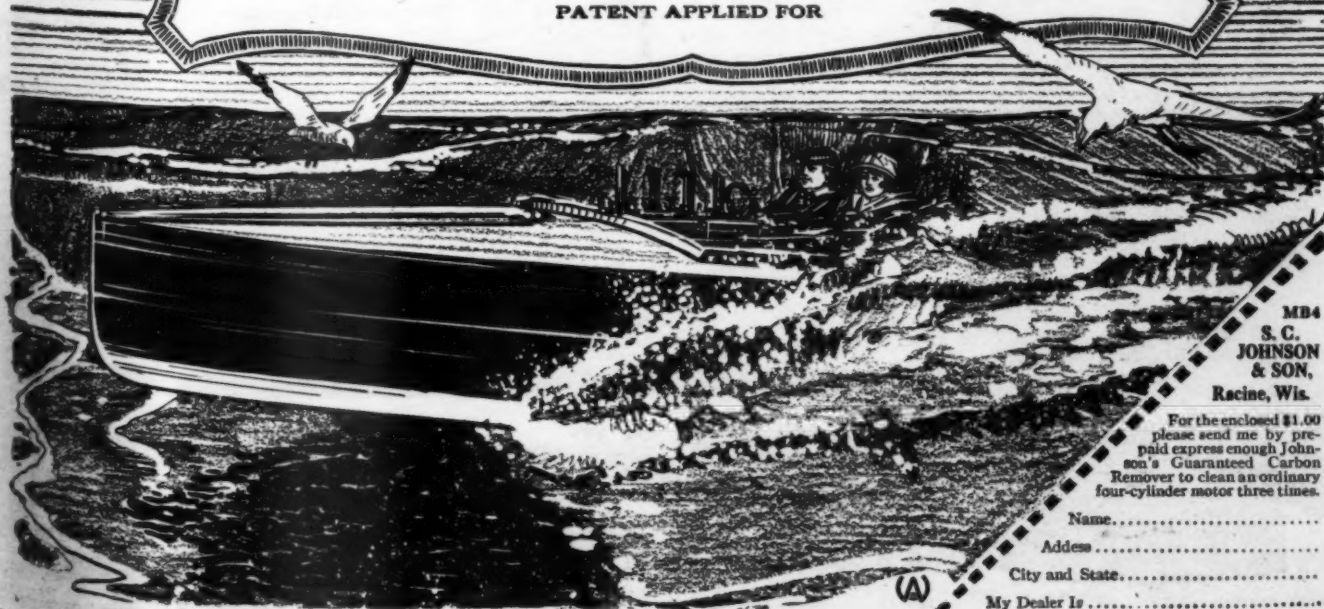
Johnson's Carbon Remover is splendid for gasoline engines of all kinds—automobiles, motorcycles, stationary engines, etc. Also fine for cleaning spark plugs. Johnson's Carbon Remover cures 80% of engine troubles.

Special Offer

If your dealer cannot supply you with Johnson's Carbon Remover send us \$1.00 and we will forward you enough to thoroughly clean an ordinary four-cylinder motor three times. Use attached coupon.

S. C. Johnson & Son, Dept. MB4, Racine, Wis.

PATENT APPLIED FOR



MB4
S. C.
JOHNSON
& SON,
Racine, Wis.

For the enclosed \$1.00
please send me by pre-
paid express enough John-
son's Guaranteed Carbon
Remover to clean an ordinary
four-cylinder motor three times.

Name.....

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My Dealer Is.....

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—and all for the want of a J-M

A lighted match, supposedly thrown overboard—a flare of flame, a report, and the motor boat ablaze. If there's help near, perhaps you'll avert disaster; and if you carry insurance, you'll suffer no heavy loss. But at best your cruise is spoiled, your boat damaged, your summer plans probably upset—all for want of a J-M.

It's a simple precaution, and a wise one, to equip your boat with a Johns-Manville Fire Extinguisher and be ready for the unexpected. With a J-M, you can master any incipient fire before it grows dangerous—even a blaze in the bilge, where there's no room to pump.

The Johns-Manville is the *only* fire extinguisher that can be discharged by pumping or by air pressure previously pumped up. Effective on all fires, whether of gasoline, grease, kerosene or electrical origin.

J-M Extinguisher Fluid—non-deteriorating and harmless to skin, fabric or machinery—is the only liquid recommended and guaranteed for recharging the Johns-Manville Extinguisher.

The Johns-Manville Fire Extinguisher is approved by the Underwriters' Laboratories, Inc., used by the U. S. Army and Navy Departments, and approved by the U. S. Bureau of Navigation.

**Price, Brass or Nickel Finish
Bracket included, \$8.⁰⁰**

H. W. JOHNS-MANVILLE CO.

NEW YORK CITY

10 FACTORIES—BRANCHES IN 55 LARGE CITIES

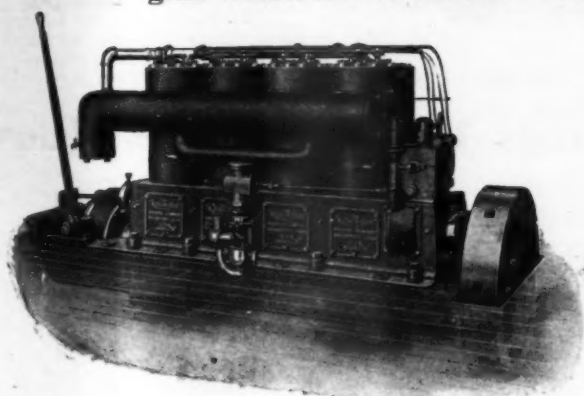
Johns-Manville Fire Extinguisher





Adequate Preparedness

It isn't enough to have a "fair weather" engine in a big boat these days. You want an engine that you can rely on in any emergency—an engine which has so much reserve power and strength that you are adequately prepared for the worst, come whatever it may.



Such an engine is

The Automatic

The reliability of the Automatic is a byword in the marine field. In working boats of all sizes and types, Automatic Heavy Duty Engines have always given such steady service that they set a new standard of dependability for marine power plants.

The Automatic heavy duty engine is built in twenty sizes—from one to six cylinders, giving from 3 to 335 H. P. The cylinders are separate and independent, with removable heads. The valves are large and may be taken out without disturbing any adjustments.

The crank shaft is hammered—not drop-forged. The reverse gear is powerful and is built-on the engine bed. The main bearings are long. It is designed throughout for hard work.

The same absolute dependability is built

into the Automatic Yacht engine which is supplied in four and six cylinder models ranging from 30 to 150 H. P. at 500 R. P. M. Your "preparedness" will be complete if you equip your patrol boat or cruiser with one of these power plants.

These engines are fitted with an enclosed governor that regulates the gas, the spark and the speed. Every working part is easy of access and we have allowed such a wide margin of safety in every part that the cost of maintenance and repair is negligible.

The Automatic can be equipped to burn kerosene. We can also supply Producer Gas Outfits for large commercial boats.

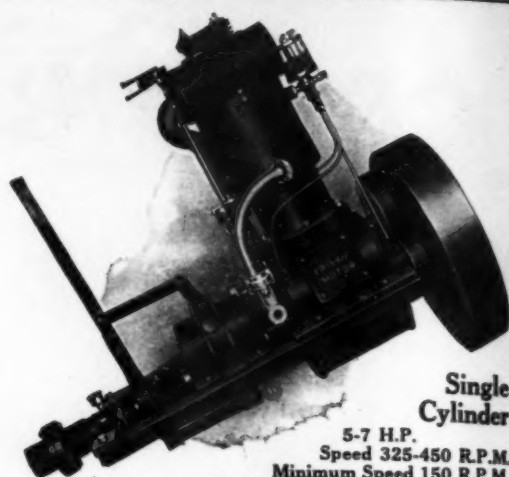
Let us send you full details of the Automatic. Just tell us something of your requirements.

THE AUTOMATIC MACHINE CO.
BRIDGEPORT CONNECTICUT



STOP? NEVER!

**The Driving Power of the
Staunch, Friendly Frisbie,
Never Fails**



Single
Cylinder

5-7 H.P.
Speed 325-450 R.P.M.
Minimum Speed 150 R.P.M.
Weight, with reverse gear, 500 lbs.
Length, with reverse gear, 44 1/4 in.

It Takes You Anywhere and Brings You Safe Home Again

The Theory

A tale of the factory — and a simple rugged friendship which begins in the construction of a Frisbie Motor.

Proven and accepted theories of motor design — consistently developed — essentially simplified and that simplicity steadily maintained.

1. Pocket-less cylinders — valve-in-head. The flame travels quicker — explosion is more positive; compression is lower without loss of power.

2. Large valves permit a rapid intake and quick, clean scavenging.

3. Just two gears in mesh — all backlash eliminated.

4. Bearings lubricated by oil — not greased.

5. Easy accessibility for season's end overhauling.

6. Frisbies that get out of the factory are already proven for friendliness.

3 H.P. to 75 H.P.
1 cylinder to 6.



Six
Cylinder

50-75 H.P.
Speed 550-800 R.P.M.
Minimum Speed 150 R.P.M.
Weight, with reverse gear, 1600 lbs.
Length, with reverse gear, 88 1/2 in.

The Practice

A tale of the sea and a simple rugged friendship which wears through the years of use of a Frisbie Motor.

"Submarines near."

In the late twilight, the message came. Like a skimming gull the power boat drove seaward against the rising wind and choppy waves, hunting the enemy.

At dusk a submarine "raised" for a moment. The power boat shivered from stem to stern under the heavy recoils as its bow gun went into action. The submarine reared shakily on end and sank. Oil slowly rose and spread over the sea.

The power boat turned to retrace its course. The gale had veered and strengthened. The beating wind pounded the angry waves into greater fury. Staggering up wave after wave and settling heavily into the troughs, the boat worked its way into harbor and safety.

So ended another day.

Days and experiences like these call for the friendliest of motors — where all depends on its never failing.

We have a list of hundreds of users of Frisbie Motors which we will send to anyone interested.

Most any marine motor buyer will find in that list someone he knows.

Frisbie Motor Company

7 College Street
Middletown, Conn.

COLUMBIAN DRIVEN

BOATS

GREENPORT
LUDERS
LAWLEY
GREAT LAKES
FAY & BOWEN
HAND V-BOTTOM
ALBANY
RELIANCE
SWASEY, RAYMOND
& PAGE BOATS
DITCHBURN

MATTHEWS CRAFT
BOWES & MOWER
HACKER
APEL
TOPPAN
NIAGARA
AND SOME
SEABURY BOATS
ELCO BOATS AND
MATHIS BOATS
AND MANY OTHERS

ENGINES

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VAN BLERCK
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REMINGTON
UNIVERSAL
WATERTOWN
WINTON
WOOD & CHUTE

**YOU CAN USE A COLUMBIAN PROPELLER TOO AND
INCREASE YOUR SPEED**



A COLUMBIAN ALWAYS WINS

We have proved that many times.

ELEVEN YEARS OF SCIENTIFIC STUDY
ELEVEN YEARS OF CAREFUL DEVELOPMENT
ELEVEN YEARS OF PRACTICAL EXPERIENCE

In selecting the most suitable propellers for all types of boats, makes us better equipped to aid you in selecting your propeller than any other concern—

Bar None

Send for our Catalog, "Propellers in a Nut Shell," and when you buy a propeller, look for the Trade Mark.
Don't let anybody "put one over." Columbian Propellers are for sale at all Dealers.



COLUMBIAN BRASS FOUNDRY

218 North Main Street
Freeport, Long Island, New York

New York Branch for local city sales only, Concourse, 50 Church Street

Can the great motor-makers be wrong?

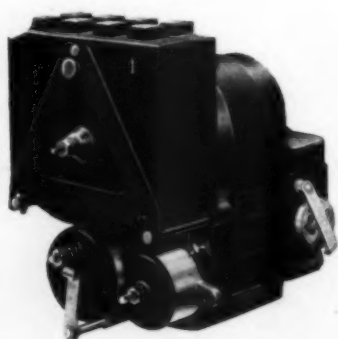
They have chosen as their magneto the Berling.

They have decided on the Berling regardless of cost-to-them—simply on the facts of the Berling's record for reliability.

On the sole basis of "worth more—does more," they have chosen the

**Worth More
Does More**

Berling Magneto



Several years have elapsed. The big manufacturers still say "we will insure our ignition with a Berling."

More and more, marine men are buying the Berling on merit.

Hence the great forward progress of the Berling.

Write for our illustrated book.

Ericsson Mfg. Company

1105-1145 Military Road

Buffalo, N. Y.

HYDE

THE
WHEEL
WITH

THE
RECORD



Hydramar
TRADE MARK
REG. U.S. PAT. OFF.

Used by "MISS MINNEAPOLIS"
THE FASTEST BOAT IN THE WORLD

Hyde Turbine Type Propellers are absolutely unequalled in efficiency and reliability when used on Speed Boats, Runabouts, Cruisers or Commercial Craft.

Don't handicap a good engine with a poor wheel.

Give the motor a chance.

Get a HYDE and secure results.

Interesting Catalogue Free Upon Request

HYDE WINDLASS COMPANY, BATH, MAINE, U. S. A.



GRAY-PRIOR
FOUR CYCLE
MARINE MOTORS
Built up to a Standard—not down to a price



New-High Grade-Long Stroke Medium Heavy Duty

Kerosene or Gasoline

This Model "D-4" is a moderate speed motor built for heavy and continuous service. Its consistent and economical operation, enormous strength and great factor of safety of all its parts, the liberal use of heavily case hardened and heat treated alloy steel parts, particularly adapts it for such service. Lack of vibration is one marked characteristic of these motors and in all cases where they have been installed the owners are very enthusiastic over their performance, for they have proved themselves to be well designed, well built and economical power plants. The silent and smooth running qualities of this Model "D-4" are both striking and remarkable and will immediately appeal to those who desire an efficient and reliable power plant for a commercial boat or cruiser from thirty-five to seventy-five feet in length.

Those who are experienced in the design, method of construction and operation of four-cycle marine motors, will recognize in the following brief specifications, the GRAY-PRIOR standard of quality and dependability. This Model "D-4" is strictly a high-grade motor—"Built up to a Standard—Not down to a Price."

SPECIFICATIONS

CYLINDERS—L-head, with detachable heads. Bore, $4\frac{1}{4}$ ". Stroke, 8".

CRANK CASE—Large removable side plates in each side of upper half for convenience and accessibility. Sight glasses cover the hand holes, permitting observations while motor is in operation.

CRANK SHAFT—40-point carbon steel, heat treated and ground to exact size. Main bearings $2\frac{1}{4}$ " in diameter. End bearings 8" long. Much larger and stronger than is usually found in a motor of this size.

CAM SHAFT—Runs in a bath of oil. Entire cam shaft assembly can be removed as a unit without dismantling the motor.

IGNITION—Two complete independent systems. High tension gear-driven magneto, also battery with Connecticut coil and distributor. Separate set of spark plugs for each system.

LUBRICATION—Pressure feed to all working parts and bearings, including reverse gear.

REVERSE GEAR—Planetary spur gear type with multiple disc clutch, large and easily adjusted. All gears and pinions made from alloy steel, heat treated and hardened. Same propeller speed on reverse as forward.

AIR COMPRESSOR and bilge pump built in on motor.

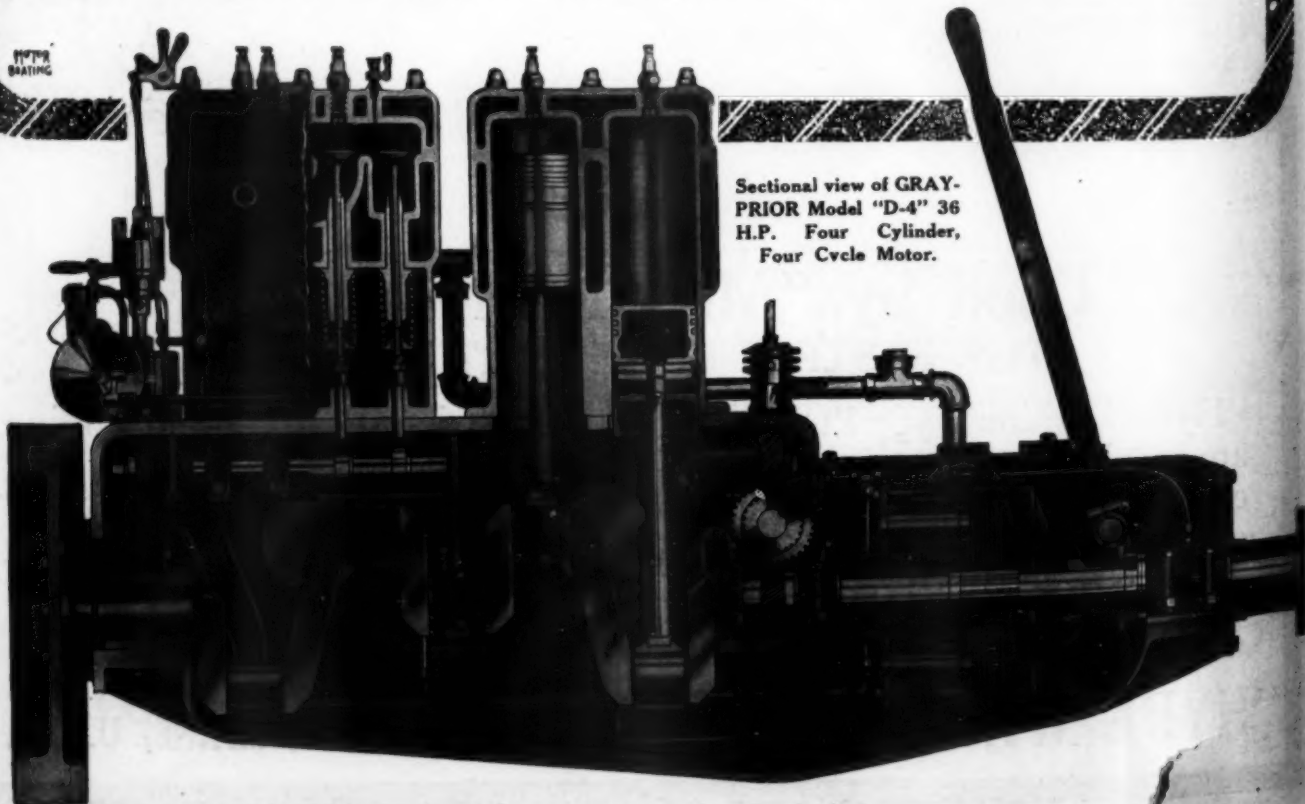
All motors are supplied with bronze fittings whether for salt water or fresh water service. Can be furnished to run in either direction for twin-screw boats.

Long stroke motors are now conceded to be the most efficient type for heavy duty service. In the GRAY-PRIOR Model "D-4" we have given special attention to accessibility, strength, endurance and reliability.

Write today for Catalog "D."

Also manufacturers of the famous "HARTFORD" Two Cycle Motors, 5 to 20 H.P.

THE GRAY & PRIOR MACHINE CO. 56 SUFFIELD STREET
Hartford, Connecticut, U.S.A.



Sectional view of GRAY-PRIOR Model "D-4" 36 H.P. Four Cylinder, Four Cycle Motor.

C & W WIRELESS

Combine Patriotism With Your Pleasure

In no better way can you serve your country than by equipping your boat for Government use. That means *Wireless-Equipped*, of course! When wireless-equipped with a C & W SET—its scope of usefulness is immediately increased 300 to 800 miles.

Yet the "war-time" necessities of the C & W SET are far outweighed by its "peace-time" benefits. No matter where you cruise—you are always in reach of Home, Business and Friends.

With one-half the size—one-fourth the weight—and one-tenth the parts of equal-powered sets—the C & W has an efficient range of 200 to 800 miles. It can easily be installed by a competent electrician on any boat. Its operation can be quickly mastered by the owner or a member of the crew.

It will immensely increase your pleasure on holiday cruises. And make your boat more worthy to represent the U.S.N.

Write today for free copy of booklet "Spanning the Seven Seas"—and full details of the C & W Set.

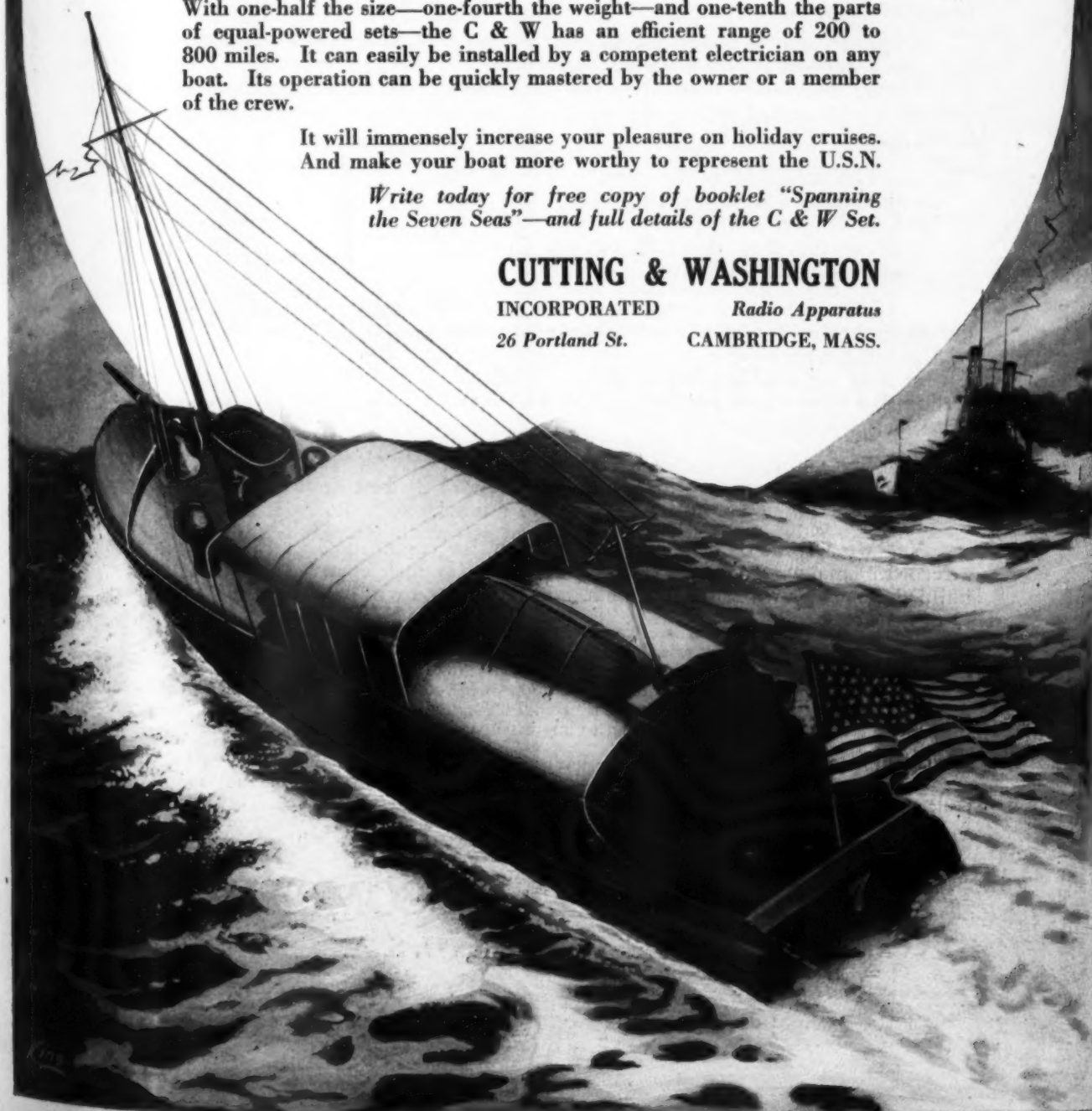
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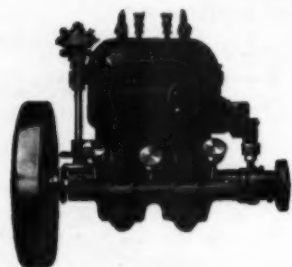
CAMBRIDGE, MASS.



Start This Year Right—Build for the Future

OUR 18th ANNUAL ANNOUNCEMENT

THE name "EAGLE" applying to a Marine Engine is a guarantee of satisfaction from the standpoint of correct design, quality and efficiency.



The Model 2K Eagle Marine Engine

We are to-day the largest producers of two cycle engines in America.

We have a large line to choose from and offer a delivery service that will be a surprise to you.

Every indication points to 1917 as the greatest Boat Building Year in our history. The demand for Engines will be enormous, the difficulties in manufacturing due to conditions existing in the raw material market will result in advanced prices. We urge our customers to place their orders early.

It appears almost useless for us after 18 years of continuous national advertising and with a business record unsurpassed, to place our merits before you for consideration at this time, nevertheless there are a few of the better class dealers that we feel should be associated with us and selling the most complete and up-to-date line of 2-cycle engines on the market.

The EAGLE is the popular priced line with excess power and excess value. You never did, and never will, purchase better value for your money than that offered you in every "EAGLE" ENGINE.

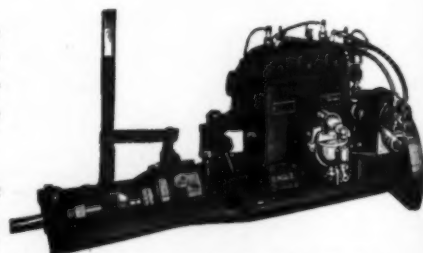
Therefore, we address ourselves to the live dealer, to the dealer who has an established business, who is sufficiently alert to grasp the importance of representing an established popular line and who realizes the importance and value of an association with an established house.

We want you to know that we are building our business on large lines. We insist on your receiving the best Engines at attractive prices; we insist that you get engines when they are wanted.

Yes, we are one of the pioneers in the marine engine field. "Eagle" engines have a record of making good and they are better to-day than ever. The more you have us build the cheaper we can build them, and the less you will be obliged to pay.

Mr. Dealer and Mr. Builder, we want you to realize the importance of selling a quality engine. Stop working in a circle, have a purpose. Business without a purpose is "like a ship without a rudder." It's up to you to make good or you make way for the other fellow. Don't be "penny-wise and pound foolish." It's a penny-wise policy to sell questionable engines when you can sell one with a world-wide reputation. Associate yourself with a live organization. Handle "Eagles." Talk "Eagles," and you will appreciate the importance of what we are attempting to impress upon you.

Start the year 1917 right; build your business for the future. There is no profit for you if you are obliged to change your sources of supply on engines each year. Our most desirable and prosperous dealers are those who have sold Eagle Engines for periods of six to twelve years. They have made money in following this policy and we see no reason why any live and enthusiastic dealer or builder cannot do the same.

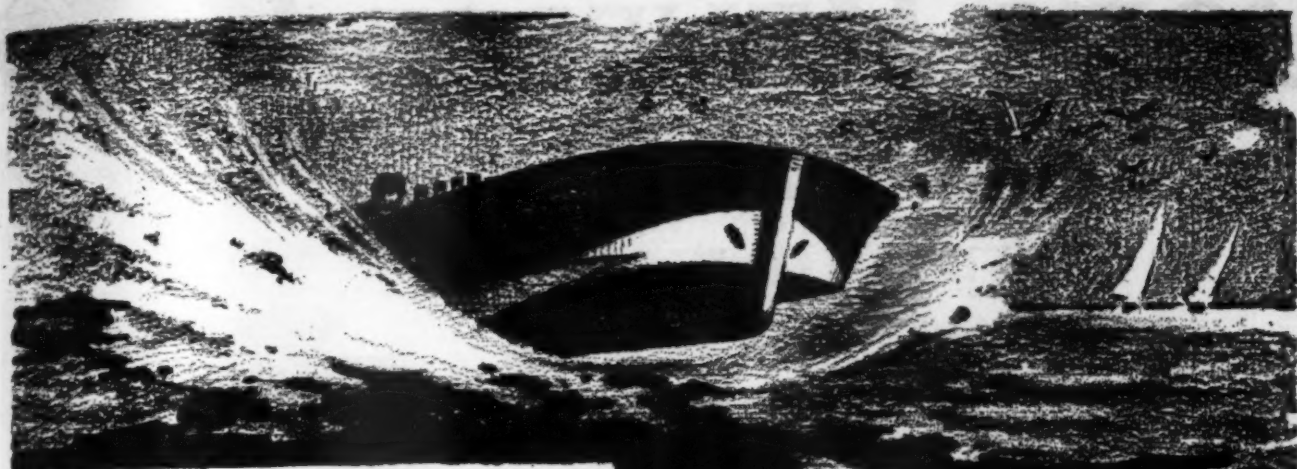


The Model 2 "O" Eagle Marine Engine
Unit Power Plant

This engine holds the world's record for speed. Running at 1,300 R.P.M. (at which speed all are tested), it develops 17½ actual H.P., making it the most desirable engine for propelling boats from 16 to 25 feet in length ever designed.

THE STANDARD COMPANY

Torrington, Conn., U. S. A.



A Letter of Interest To You

EVERY man who owns a car or a motor boat should read this letter from the C. C. Smith Boat and Engine Company, builders of the fastest boat in the world—the Miss Minneapolis, which has a record of 63.57 miles per hour.

Proper lubrication of the high speed motors used in automobiles and in many boats is of paramount importance to the owners. Your experience has probably shown you that such lubrication may not in all cases be easily obtained.

TEXACO MOTOR OIL

in the opinion of experts who have studied the question of lubrication from every angle, does lubricate properly under even the most exacting circumstances.

The selection of this oil by Mr. Smith and his associated engineers should interest you, not essentially because it related to the fastest boat ever built and helped to give her her speed, but because to a certain extent their business prestige was at stake, and because they had at their disposal all brands of motor oil with which they could experiment and from which to make their choice.

Such impartial opinion from men of great experience in their field is worth profiting by. You can't do better than follow their example.

Use Texaco Motor Oil in your automobile or motor boat. The safest way, the best way, to buy it is in one or five gallon cans.



THE TEXAS COMPANY
New York Chicago Houston
DISTRIBUTING OFFICES IN MOST CITIES

THE BOAT BUILDERS'
C. C. SMITH
BOAT AND ENGINE
COMPANY
C. C. SMITH, PRES.

ALGONAC, MICHIGAN, AUG. 21,

Texas Oil Company,
Chicago, Ill.

Gentlemen:-

Enclosed please find check for (\$15.90) to pay for our last shipment of extra heavy TEXACO oil. We herewith want to order for immediate shipment by Adams express 40 gallons in 5 gallon cans of TEXACO #556 gallons in 5 gallon cans of to you that extra heavy. We would also say we have used your TEXACO oil in the Baby Speed Demon, Baby Reliance, Buffalo Inquiry, Miss Detroit and Miss Minneapolis and up to the present time have never had to remove a bearing on account of lubrication or for the inefficiency of the oil. This may be of some value to you as an advertisement.

Please give this order your prompt attention we want this oil to drive next Saturday in the Gold Cup races.

W. Smith

Very truly yours,

C. C. SMITH BOAT & ENGINE CO.

CCS/ER

Per *W. Smith* Pres.

JOE'S REVERSE GEAR

and two famous boats equipped with it

It takes a boat of the "Penn Yan's" class to determine the efficiency of a reverse gear. Up on Lake Keuka, New York State, the "Penn Yan" serves in the capacity of passenger and freight steamer making regular trips around the lake every day, and stopping at all the landings.

The "Penn Yan" is an important boat and it is **important** that her mechanism be in perfect working order every minute of the day. She is equipped with **No. 172 Joe's Duplex Drive Heavy Duty Reverse Gears.**

Everyone knows that "Miss Detroit" won last year's big race. She's a speedy little boat and nothing but the best equipment is good enough for her. She, too, depends on a **Joe's Reverse Gear.**



"Miss Detroit." Powered with a high-speed starting motor. Equipped with a Joe's Duplex Drive Gear.

The "Penn Yan." She is 130 feet long and powered with two heavy duty Buffalo motors on No. 172 Joe's Duplex Drive Gears.



Now, if Joe's Duplex Drive Heavy Duty Reverse Gear is good enough for these boats—and a good many others—it is good enough for you. It is the only heavy duty gear on the market that has same speed ahead and astern; that does not depend on locked gear teeth for the forward drive. The price is not prohibitive and will interest you.

Write for particulars.

The SNOW & PETRELLI MFG. CO.

NEW HAVEN, CONN., U.S.A.

Manufacturers of Heavy Duty and High Speed Reversing Gears, One Way Clutches, Rear Starters, etc.

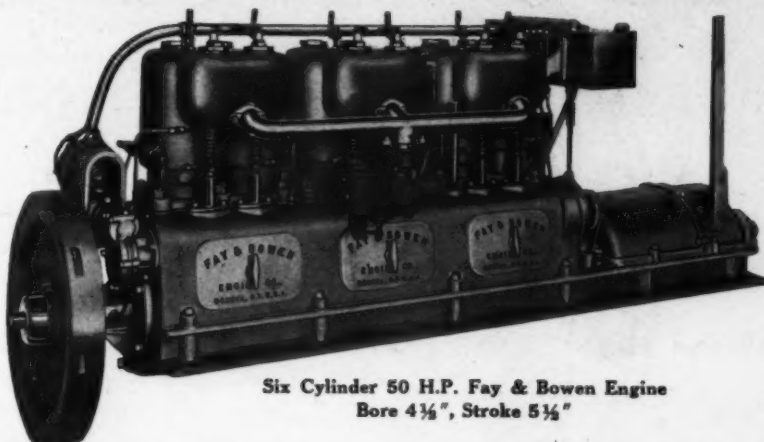
Agents: J. King & Co., 10 Church St., Limehouse, London, Eng. L. H. Conklin Co., Seattle, Wash. Gasoline Engine Equipment Co., 85 Liberty Street, New York. Rapp-Huckins Co., Boston. Wood, Wallace & Leggat, Vancouver, B. C. Sales Co., Montreal. Thompson Engine & Launch Co., Foot Charles St., Baltimore. A. R. Williams Mch. Co., Toronto. Green Boat Co., Chicago.



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A Fast and Comfortable Family Boat

is the Fay & Bowen 30 ft. raised deck runabout. One of our regular stock models, and in fact one of the most popular stock boats ever produced by any builder. Its absolute dependability is guaranteed by the six cylinder 50 H.P.



Six Cylinder 50 H.P. Fay & Bowen Engine
Bore $4\frac{1}{4}$ ", Stroke $5\frac{1}{4}$ "

FAY & BOWEN ENGINE

The boat is $30 \times 5\frac{1}{2}$ '—smooth running and *dry*, handsome in appearance, roomy without being "tubby," well built, beautifully finished and completely equipped. Speed 20 miles an hour with the 50 H.P. engine. This boat will make a name for itself in your club races.

To insure spring or early summer delivery, orders should be placed without delay.

Literature on request.



Engines

Boats

Electric Lighting Units
Pumping Sets, Etc.

FAY & BOWEN ENGINE CO.

104 Lake Street

Geneva, N. Y., U. S. A.

New York Office: 50 Church St., on Concourse, Suther Bros., Representatives
Made for Canada by the St. Lawrence Engine Co., Ltd., Brockville, Ont.

What a Few Owners of These Boats Say:

CHARLES C. GILBERT, Detroit

"My man tells me that all boats are compared to the 'ELLA PARKHURST,' and judging from the statements he has made there has never been anything in those waters which could compare with her."

A. M. HARRIS, New York City

"The family can't say enough. I think she is a wonder in every way."

GEORGE L. LEONHARD, Passaic, N. J.

"She is no doubt the finest all-around family speed boat on Lake Hopatcong."

OSCAR JEBSEN, Christianssand, Norway

"The launch is all right and I have already got very fond of it."



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Here's A Good Engine

Let's forget price and talk quality. Anyway, Kermath prices speak for themselves.

The Kermath is a quality proposition, from start to finish. Not the one-engine-a-week quality where you pay for hand work on little unessential details. Not the exclusive built-only-for-millionaires quality where the price is set high so that ordinary boatmen-for-the-love-of-the-sport won't make the engine too popular, therefore too common.

Kermath quality is the kind you get in a thousand dollar automobile. You can pay two, three, five—even ten—times as much, without getting much more in actual service value. Kermath sells on quality even though it is a popular priced engine.

The Kermath is a thoroughly good engine. Kermath goodness is reliable, dependable, safe. It is the kind you can bank on, for a sensible, conservative investment of your money. It is the kind you can depend on, to take you out in rough weather and bring you back safe and sound.

So many boat owners are satisfied with the Kermath kind of goodness that we sell more engines and save money by the quantity production. Every Kermath buyer gains by Kermath popularity.

Let us tell you all about Kermath engines.
Write today for full information.

10-12 H. P. \$225 to \$395
16-18 H. P.
20-25 H. P.

All Models Four Cylinder Four Cycle.

KERMATH MANUFACTURING COMPANY

Department 2

DETROIT, MICH.

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